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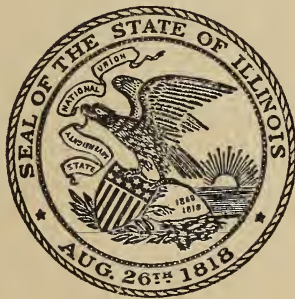
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URBANA

REPORT OF INVESTIGATIONS—NO. 150

ILLINOIS MINERAL INDUSTRY IN 1949

BY

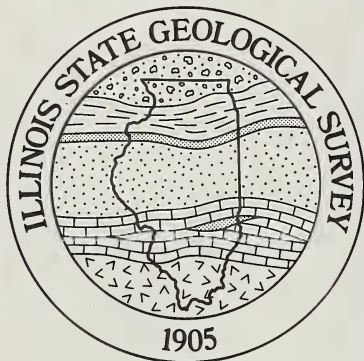
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Topographic Mapping in Cooperation with the United States Geological Survey.
This report is a contribution of the Mineral Economics Section.

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ILLINOIS MINERAL INDUSTRY IN 1949

BY

WALTER H. VOSKUIL

ILLINOIS' PLACE of distinction in industrial activity in the Upper Mississippi Valley and the nation rests in no small part upon its mineral industry. The primary materials of industrial production—fuels and iron ore, the latter from the Lake Superior district—are available in abundant quantities and are assembled for processing at a low cost on Lake Michigan near the large market of Chicago and smaller cities in the industrial belt. There are abundant cheaply mined and good quality coals at points accessible to manufacturing centers. In addition to this, certain minerals essential to the processing of primary steel, such as refractory materials and fluxes, are also present in the area, together with a variety of mineral products for foundry, chemical, construction, and other uses.

The location of a primary steel industry serves as a nucleus around which have developed a large number of industries for the manufacture of industrial, agricultural, and electrical machinery, and transportation equipment. The same factors of low cost transportation and market outlet have attracted large petroleum refineries in areas adjacent to both Chicago and St. Louis. The production of coke and refined oil has given rise to the development of associated chemical industries, also important in Chicago and East St. Louis.

This wide array of manufacturing industries lies in the center of one of the most efficient and low-cost food producing areas in the United States, if not in the world. A fertile soil has provided an area of high food yields, a mechanized agriculture has brought production costs down to a low level, and a flat topography has aided in the introduction of cost-saving farm machinery. The low cost of transporting farm products to consuming centers, and the use

of power on farms, replacing animal power, has added millions of acres to the farm land available for the production of food.

The unusual and excellent endowment in Illinois of industrial, mineral, and agricultural resources offers opportunities for production and employment that are virtually unmatched elsewhere.

The wide variety of mineral production in the State and the high rank of Illinois among the states in the production of several of these minerals (see table 1) indicates Illinois' important position as a mineral producer.

The mineral industry in Illinois is a source of materials for a wide range of economic activities. Coal and oil, the two leading minerals in value, supply power and fuel for manufacturing industries, rail and automobile transportation, and for mechanical power in agriculture. An abundance of sand, gravel, stone, and cement-making materials contributes to the needs of the construction industries. Not only is Illinois an important producer of minerals, but it also ranks high as a center for the processing of mineral raw materials into primary raw materials for the use of industry.

Minerals for special purposes, such as refractory clays and clays for pottery making, silica sand for glass and other specialized industries, are produced in important quantities. Illinois maintains a leading position in the production of fluorspar, a mineral which is finding an important place in the chemical industries. A summary of the mineral position of Illinois is given in tables 1 and 2, and figure 1.

ACKNOWLEDGMENTS

This report is made possible through the cooperation of the Bureau of Mines of the United States Department of the Interior, the Illinois State Department of Mines and

TABLE 1.—SUMMARY OF MINERAL PRODUCTION OF

Line No.	Material	Detail table	Unit	1947					
				Quantity	Value at plants		Rank among states		
					Total	Av.	Amt.	Val.	
1	<i>Coal—bituminous</i>	13	Tons	68,325,000	\$215,224,000	\$3.15	4	4	
	<i>Petroleum</i>								
2	Crude oil.....	23	Bbbs.	66,459,000	139,564,000	2.10	6	6	
3	Natural gas—marketed.....	—	M cu. ft.	*17,023,000 *	1,565,000 *	.092	15	14	
4	Natural gas—used in fields..	—	M cu. ft.	*15,910,000 *	1,190,000 *	.075	7	6	
5	Natural gasoline.....	—	Gals.	162,923,000 *	8,793,000	.054	5	5	
6	Liquefied petroleum gases...	—	"						
7				—	* 151,112,000	—			
	<i>Stone, rock products</i>								
8	Limestone, dolomite, marl...	31, 32	Tons	15,786,379	18,424,089	1.17	4	3	
9	Cement.....	35	Bbbs.	* 7,515,955 *	14,164,976 *	1.88	9	9	
10	Lime.....	36	Tons	299,187	2,736,262	9.15	6	5	
11	Ganister, sandstone.....	37	"	16,299	18,757	1.15			
12				—	* 35,344,084	—			
	<i>Clays, clay products</i>								
13	Clays (except fuller's earth)..	38	Tons	201,025	613,265	3.05	3		
14	Fuller's earth.....	38	"	37,740	388,955	10.31	4	4	
15	Clay products—refractories..	39	"	253,408	7,074,774	27.92			
16	Structural.....	39	Eqv. tons	1,475,779	12,806,298	8.68			
17	Whiteware and pottery....	39	—	—	12,859,663	—			
18				—	33,742,955	—			
	<i>Sand and gravel</i>								
19	Silica sand.....	40	Tons	2,533,773	4,351,243	1.72	1	1	
20	Other sand.....	41	"	4,535,616	3,110,206	.69			
21	Gravel.....	41	"	8,275,141	4,818,399	.58			
22				15,344,530	12,279,848	.80	4	3	
	<i>Silica and tripoli</i>								
23	Ground silica.....	42	Tons	189,256	1,457,631	7.70	1	1	
24	Tripoli ("amorphous" silica)..	43	"	14,687	314,075	21.38	2	2	
25				203,943	1,771,706	8.67			
26	<i>Fluorspar</i>	45	Tons	167,157	6,148,654	36.78	1	1	
	<i>Metals</i>								
27	Zinc.....	50	Tons	10,073	2,437,666	242.00	17	17	
28	Lead.....	50	"	2,325 *	674,250	*290.00	14	14	
29	Silver.....	50	Troy ozs.	1,790	1,620	.905	20	20	
30				—	* 3,113,536	—			
31	<i>Annual mineral production</i>			—	458,733,783	—			
	<i>Minerals processed, but mostly not mined in Illinois</i>								
32	Coke produced and by-products sold.....	20	—	—	59,908,000	—	—	5	
33	Pig iron produced.....	—	Tons	* 5,600,154 *	173,436,769 *	30.97	4	4	
34	Slab zinc.....	—	"	113,192	27,392,464	242.00	4	4	
35	Miscellaneous minerals.....	—	—	—	* 3,914,577	—			
36	<i>Total minerals processed</i>			—	* 264,651,810	—			
37	<i>Total minerals produced and processed</i>			—	*\$723,385,593	—			

* Revised figures.

a Compiled from various sources, as stated in footnotes for each table.

b Not available.

c Estimated.

d Subject to revision.

INTRODUCTION

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ILLINOIS, SOLD OR USED BY PRODUCERS, 1947-1949^a

1948*					1949 ^d					Line No.	
Quantity	Value at plants		Rank among states		Quantity	Value at plants		Percent change in amount from 1948	Percent change in value from 1948		
	Total	Av.	Amt.	Val.		Total	Av.				
66,167,000	\$256,728,000	\$ 3.88	4	4	47,630,000	\$192,901,000	\$4.05	— 28.0	— 24.8	1	
64,808,000	179,518,000	2.77	6	6	64,583,000	178,895,000	2.77	— 0.3	— 0.3	2	
14,062,000	1,730,000	.123	16	15	(b)	(b)	—			3	
13,502,000	1,108,000	.082	10	8	(b)	(b)	—			4	
148,627,000	*10,404,000	* .07	6	—	136,536,000	*10,923,000	*.08	— 8.1	+ 5.0	5	
—	192,760,000	—			—	189,818,000	—	—	— 2.0	6	
18,593,042	23,379,762	1.26	4	3	16,822,053	20,472,915	1.22	— 9.5	— 12.4	8	
7,875,758	16,078,433	2.04	10	10	8,200,148	17,340,782	2.11	+ 4.1	+ 7.9	9	
283,090	3,000,225	10.60	7	7	276,161	3,197,890	11.58	— 2.4	+ 6.6	10	
200	1,000	5.00			830	9,378	11.30	—	—	11	
—	42,459,420	—			—	41,020,965	—	—	— 3.4	12	
} 261,205	1,293,385	4.95	4		} 210,294	994,751	4.73	— 19.5	— 23.1	13	
	262,871	8,281,469				31.50	7,622,047	35.57	— 18.5	— 8.0	14
	1,780,898	17,200,539				9.66	15,077,840	10.18	— 16.8	— 12.3	15
	—	17,924,175				—	14,381,373	—	—	— 19.8	16
—	44,699,568	—			—	38,076,011	—	—	— 14.8	17	
2,504,528	4,795,569	1.91	1	1	1,990,122	4,138,336	2.08	— 20.5	— 13.8	19	
5,738,402	4,133,668	.72			6,631,206	4,919,175	.74	+ 15.6	+ 18.8	20	
9,353,275	6,059,445	.65			8,413,802	5,468,026	.65	— 10.0	— 9.8	21	
17,596,205	14,988,682	.85	4	4	17,035,130	14,525,537	.85	— 3.2	— 3.1	22	
222,827	1,864,585	8.37	1	1	217,577	1,887,145	8.67	— 2.4	+ 1.2	23	
(b)	(b)	—			(b)	(b)	—	—	—	24	
222,827	1,864,585	8.37			217,577	1,887,145	8.67	— 2.4	+ 1.2	25	
172,561	6,322,246	36.64	1	1	120,881	4,621,733	38.23	— 30.0	— 26.9	26	
12,980	3,452,680	266.00	14	14	18,157	4,502,936	248.00	+ 39.9	+ 30.4	27	
3,695	1,322,810	358.00			3,824	1,208,384	316.00	+ 3.5	— 8.6	28	
4,047	3,663	.905			3,128	2,831	.905	— 22.7	— 22.7	29	
—	4,779,153	—			—	5,714,151	—	—	+ 19.5	30	
—	564,601,654	—			—	488,564,542	—	—	— 13.5	31	
—	66,229,000	—	—	6	—	62,253,000	—	—	— 6.0	32	
5,512,781	196,916,537	35.72	4	4	*4,410,225	*167,588,550	* 38.00	— 20.0	— 15.0	33	
93,229	24,798,914	266.00	4	4	97,800	* 24,254,400	*248.00	+ 5.0	— 2.0	34	
—	3,921,816	—			—	4,955,056	—	—	+ 26.3	35	
—	291,866,267	—			—	259,051,006	—	—	— 11.2	36	
—	\$856,467,921	—			—	\$747,615,548	—	—	— 12.7	37	

Minerals, and mineral producers throughout Illinois, who furnished information regarding their operations.

Special acknowledgment is made to Miss Ethel M. King, who has assembled the statistics for the report on stone, sand, gravel, clay and clay products, silica and tripoli; and to W. L. Busch for aid in preparation of the sections on coal, coke, petroleum, natural gas, zinc, lead, and fluor-spar.

Each section of this report was prepared in close collaboration with the heads of the several mineral research divisions of the

Illinois State Geological Survey. Special assistance and advice were contributed by Ralph E. Grim, Petrographer and Head of the Division of Clay Resources and Clay Mineral Technology; G. H. Cady, Senior Geologist and Head of the Coal Division; A. H. Bell, Geologist and Head of the Oil and Gas Division; J. E. Lamar, Geologist and Head, and Robert M. Grogan, Geologist, both of the Industrial Minerals Division; F. H. Reed, Chief Chemist and Head of the Geochemistry Section, and G. C. Finger, Chemist and Head of the Fluor-spar Division of that Section.

TABLE 2.—VALUE OF ILLINOIS MINERAL PRODUCTION, 1914-1949^a
(In thousands of dollars)

Year	Mineral production of Illinois	Minerals processed, but mostly not mined, in Illinois	Total minerals produced and processed
1914.....	\$117,166	\$ 44,843	\$162,009
15.....	114,446	82,871	197,317
1916.....	146,360	130,082	276,442
17.....	234,736	144,754	379,490
18.....	271,244	149,740	420,984
19.....	213,701	95,077	308,778
20.....	373,926	137,228	511,154
1921.....	254,019	54,136	308,155
22.....	244,618	85,820	330,438
23.....	282,761	142,131	424,892
24.....	235,796	95,506	331,302
25.....	231,658	118,702	350,360
1926.....	237,242	119,642	356,884
27.....	180,394	105,099	285,493
28.....	188,099	110,622	298,721
29.....	182,791	125,516	308,307
30.....	148,311	89,303	237,614
1931.....	108,066	52,014	160,080
32.....	71,693	24,385	96,078
33.....	74,837	34,786	109,623
34.....	89,212	41,405	130,617
35.....	96,484	57,038	153,522
1936.....	117,916	78,693	196,609
37.....	133,437	104,359	237,796
38.....	130,155	50,482	180,637
39.....	215,157	86,324	301,481
40.....	287,327	114,814	402,141
1941.....	333,225	168,338	501,563
42.....	341,835	199,281	541,116
43.....	337,912	221,939	559,851
44.....	342,832	206,833	549,666
45.....	344,267	193,658	537,925
1946.....	379,673	183,491	563,164
47.....	*458,734	*264,652	*723,386
48.....	*564,602	*291,866	*856,468
49.....	488,565	259,051	747,616

* Revised figures.

^a Compiled from following sources:

For years 1914-1922, incl.—U. S. Geological Survey, Mineral Resources of United States.

1923-1931, " —U. S. Bureau of Mines, Mineral Resources of United States.

1932-1938, " —U. S. Bureau of Mines, Minerals Yearbooks.

1939-1949, " —Summary of canvass made by Illinois Geological Survey and U. S. Bureau of Mines, and from Minerals Yearbooks.

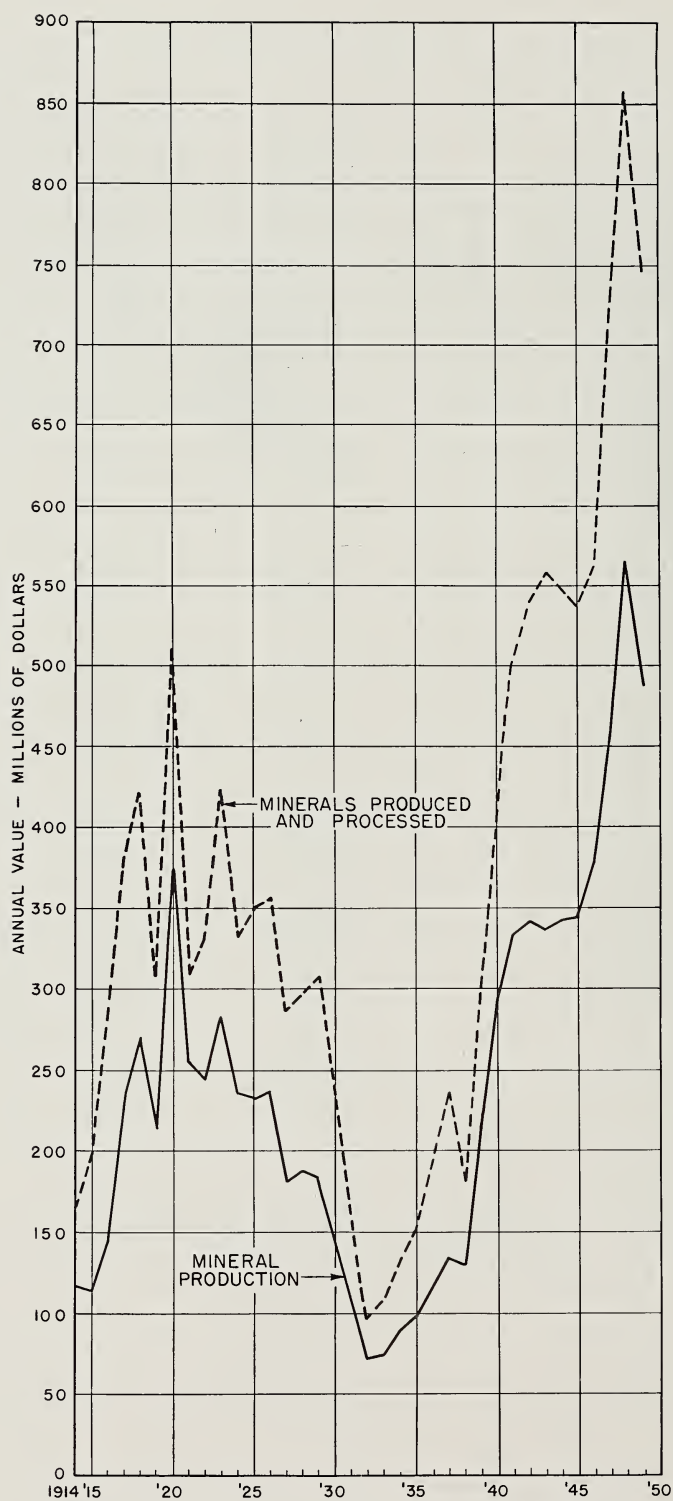


FIG. 1.—Value of annual mineral production in Illinois.

COAL

PRODUCTION IN 1949

Coal production in the United States in 1949 was the lowest in a decade. A prolonged suspension of mining during negotiations for a new contract between management and labor resulted in lost time. Production of coal, as shown in table 3, was 435 million tons, as compared with 600 million tons in 1948.

PRODUCTION BY DISTRICTS

Coal production by districts is shown in table 5 for three years. Of particular interest are districts east of the Mississippi River which produce more than 90 percent of the bituminous coal output. Although competition among producing districts in price areas is keen, there is a certain degree of market specialization among the several districts, based mainly on the characteristics of the coal.

Districts 2, 7, and 8 (fig. 2) supply coking coal for the blast furnaces and also a high percentage of fuel used for domestic heating. These two markets are, in a sense, complementary. Coal suitable for coking is also excellent for domestic fuel. The small sizes and screenings are therefore absorbed by the coking market and the prepared sizes find a ready outlet as domestic fuel over a large area.

Districts 3, 4, 6, and 9 (fig. 2) market one-third or more of their output as rail-

road fuel, whereas the remaining districts distribute their output among manufacturing industries, utilities, railroads, and retail yards.

UPPER MISSISSIPPI VALLEY

The Upper Mississippi Valley coal market area includes Illinois, Indiana, Wisconsin, Minnesota, Iowa, Missouri, the eastern Dakotas, and Kansas.

The coal marketed in this area comes from the Eastern Interior coal field in the states of Illinois, Indiana, and western Kentucky, and from the Appalachian districts of Pennsylvania, West Virginia, eastern Kentucky, and Ohio. Coal is distributed by rail, rail-lake, rail-river, and truck. The coal requirements of the Upper Mississippi Valley include fuel for domestic heating, fuel for general industrial purposes, fuel for rail transportation, and coal for the manufacture of metallurgical coke. Competitive conditions for the several producing districts in the Appalachian fields and in the Eastern Interior districts of Illinois, Indiana, and western Kentucky vary from the keenly competitive industrial and railroad fuel markets to the less competitive domestic fuel trade and by-product coal market.

Production of coal in principal fields competitive with Illinois fields is shown in table 6.

TABLE 3.—NATIONAL PRODUCTION OF BITUMINOUS COAL, 1940-1949^a
(In thousands of tons)

Year	Amount	Percent of change by years	Year	Amount	Percent of change by years
1940.....	460,772		1945.....	577,617	- 6.8
1941.....	514,149	+11.6	1946.....	533,922	- 7.6
1942.....	582,693	+13.3	1947.....	630,624	+18.1
1943.....	590,177	+ 1.3	1948.....	*599,518	- 4.9
1944.....	619,576	+ 4.8	1949.....	^b 435,000	-27.4

* Revised figures.

^a Source: U. S. Bureau of Mines.

^b Preliminary figures.

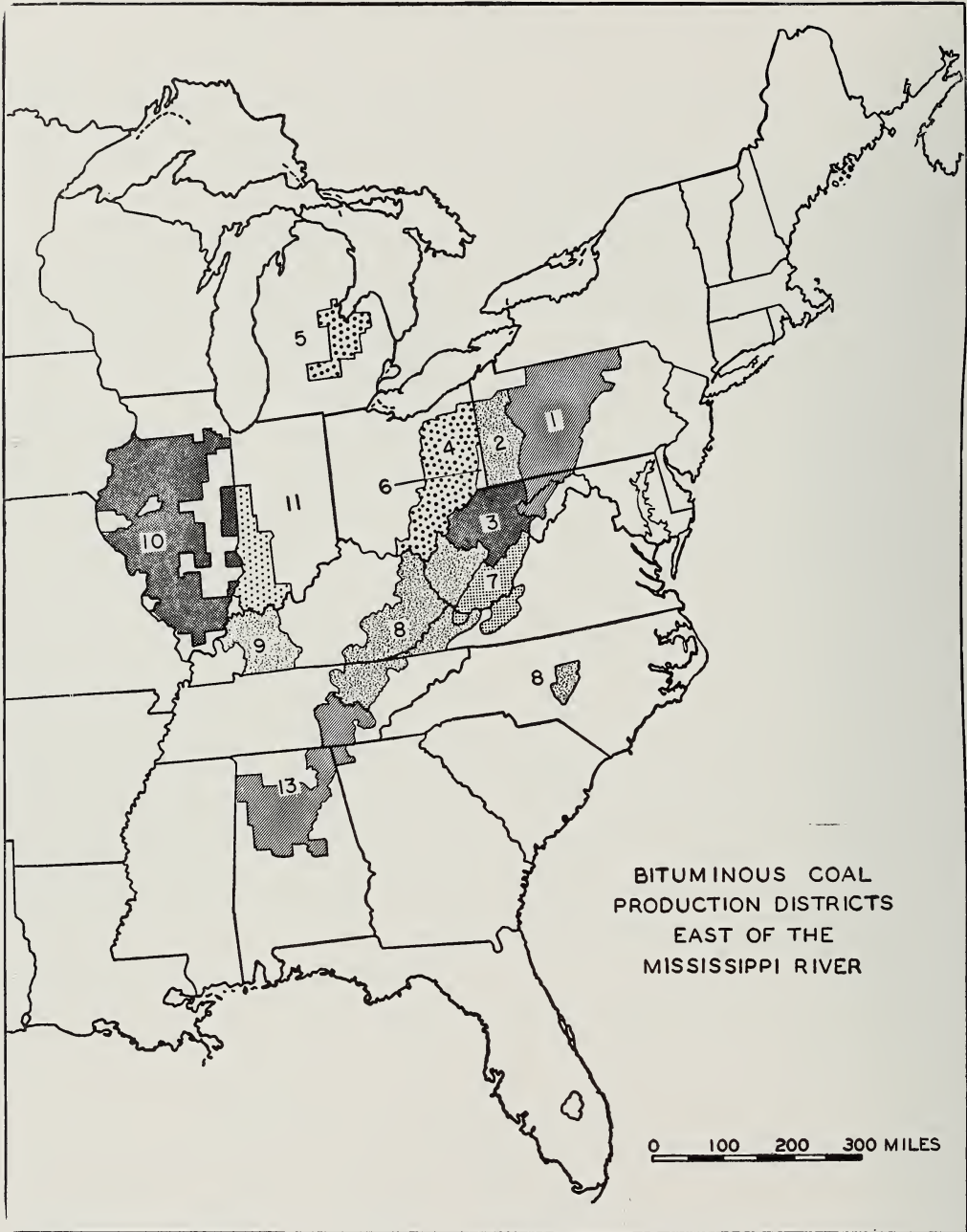


FIG. 2.

TABLE 4.—BITUMINOUS COAL PRODUCTION IN THE UNITED STATES
BY STATES, 1945-1949^a
(In thousands of tons)

State	1945	1946	1947	1948*	1949 ^b
Alabama.....	18,236	16,183	19,048	18,801	12,420
Alaska.....	298	367	361	408	455
Arkansas.....	1,854	1,631	1,871	1,662	1,180
Colorado.....	7,621	5,914	6,358	5,631	4,540
Illinois.....	73,011	63,469	67,860	65,342	47,800
Indiana.....	25,183	21,697	25,449	23,849	17,350
Iowa.....	2,046	1,788	1,684	1,670	1,830
Kansas.....	3,228	2,493	2,745	2,538	2,024
Kentucky.....	69,593	66,553	84,241	82,084	58,932
Maryland.....	1,763	2,003	2,051	1,661	610
Missouri.....	3,983	3,733	4,236	4,022	3,206
Montana.....	4,467	3,723	3,178	2,898	2,750
New Mexico.....	1,484	1,280	1,443	1,364	980
North Dakota.....	2,522	2,555	2,760	2,961	3,020
Ohio.....	32,737	32,314	37,548	38,708	29,946
Oklahoma.....	2,909	2,647	3,421	3,462	2,510
Pennsylvania.....	132,965	125,497	147,079	134,542	91,483
Tennessee.....	6,271	5,618	6,258	6,483	4,023
Texas.....	80	56	61	57	40
Utah.....	6,679	5,994	7,429	6,813	5,884
Virginia.....	17,235	15,527	20,171	17,999	13,685
Washington.....	1,357	991	1,118	1,220	895
West Virginia.....	152,035	144,020	176,157	168,862	123,834
Wyoming.....	9,847	7,635	8,051	6,412	5,572
Other States.....	213	234	46	69	31
Total.....	577,617	533,922	630,624	599,518	435,000

* Revised figures.

^a Source: U. S. Bureau of Mines.

^b Preliminary figures.

^c Includes South Dakota.

EASTERN INTERIOR BASIN

Table 7 shows coal production in the Eastern Interior coal basin for the years 1945-49 inclusive. The production history of three competitive districts in Illinois, Indiana, and western Kentucky and the contribution of each to the total production of the Eastern Interior basin from 1913 to 1942 are shown in table 4 of "Illinois Mineral Industry in 1942."¹

CUMULATIVE COAL PRODUCTION

Table 8 gives cumulative coal production for Illinois, by counties, for the period 1882-1949, as compiled from the annual Coal Reports of the Department of Mines

¹ Voskuil, Walter, Illinois Geol. Survey Rept. Inv. 94, 1944.

and Minerals, with an estimate of production for the period 1833-1881. Sixty-nine counties have a recorded production during this period. Eleven of these counties produced more than 100 million tons each, the highest recorded production being from Franklin County with a total of 436,106,402 tons (table 9). (A history of coal production by counties and by years was published in "Illinois Mineral Industry in 1947,"² table 14, pp. 26-37).

PRODUCTION BY MONTHS

In table 10 is shown the production of coal in the United States and in Illinois by months. Normal seasonal trends are obscured in the production performance in

² Voskuil, Walter, Illinois Geol. Survey Rept. Inv. 140, 1949.

ILLINOIS MINERAL INDUSTRY IN 1949

TABLE 5.—PRODUCTION OF BITUMINOUS COAL, BY DISTRICTS, 1947-1949^a
(In thousands of tons)

District	1947		1948*		1949 ^b	
	Amount	Percent of total	Amount	Percent of total	Amount	Percent of total
<i>Price Area 1</i>						
1. Eastern Pennsylvania.....	62,832	10.0	60,046	10.0	40,383	9.3
2. Western Pennsylvania.....	87,610	13.9	77,215	12.9	52,516	12.1
3. Northern West Virginia.....	52,815	8.4	47,706	8.0	36,417	8.4
4. Ohio.....	37,548	5.9	38,708	6.4	29,946	6.9
5. Michigan.....	14	—	13	—	3,629	.8
6. Panhandle.....	4,995	0.8	4,741	.8		
7. Southern Numbered 1.....	61,782	9.8	60,483	10.1	43,708	10.0
8. Southern Numbered 2.....	142,608	22.6	137,706	23.0	97,781	22.5
Total—Price Area 1.....	450,204	71.4	426,618	71.2	304,380	70.0
<i>Price Area 2</i>						
9. West Kentucky.....	22,182	3.5	22,397	3.7	17,320	4.0
10. Illinois.....	67,860	10.8	65,342	10.9	47,800	11.0
11. Indiana.....	25,449	4.0	23,849	4.0	17,350	4.0
12. Iowa.....	1,684	.3	1,670	.3	1,830	.4
Total—Price Area 2.....	117,175	18.6	113,258	18.9	84,300	19.4
<i>Price Area 3</i>						
13. Southeastern.....	20,188	3.2	20,159	3.3	13,260	3.0
Total—All Eastern Districts.....	587,567		560,035		401,940	
Percent of U.S. Total.....		93.2		93.4		92.4
Total—United States.....	630,624		599,518		435,000	

* Revised figures.

^a Source: U. S. Bureau of Mines.^b Preliminary figures.TABLE 6.—PRODUCTION IN DISTRICTS WITH LARGE ALL-RAIL SHIPMENTS TO THE
UPPER MISSISSIPPI VALLEY, 1945-1949^a
(In thousands of tons)

Year	Districts 7 and 8 West Virginia, Kentucky, Virginia		Districts 9, 10, and 11 Illinois, Indiana, West Kentucky		Illinois	
	Amount	Index	Amount	Index	Amount	Index
1945.....	172,756	100	118,638	100	73,011	100
1946.....	166,788	96	102,377	86	63,469	87
1947.....	204,390	120	115,491	97	67,860	93
1948*.....	198,189	115	111,588	94	65,342	89
1949 ^b	141,489	82	72,470	61	47,800	65

* Revised figures.

^a Source: U. S. Bureau of Mines.^b Preliminary figures.

TABLE 7.—PRODUCTION OF BITUMINOUS COAL IN THE EASTERN INTERIOR COAL FIELD, 1945-1949^a
(In thousands of tons)

Year	Illinois		Indiana		West Kentucky		Total
	Amount	Percent ^b	Amount	Percent ^b	Amount	Percent ^b	
1945.....	73,011	61.6	25,183	21.2	20,444	17.2	118,638
1946.....	63,469	62.0	21,697	21.2	17,211	16.8	102,377
1947.....	67,860	58.8	25,449	22.0	22,182	19.2	115,491
1948*.....	65,342	58.5	23,849	21.4	22,397	20.1	111,588
1949 ^c	47,800	58.0	17,350	21.0	17,320	21.0	82,470

* Revised figures.

^b Percent of total in Eastern Interior Coal Field.^a Source: U. S. Bureau of Mines.^c Preliminary figures.TABLE 8.—ILLINOIS COAL PRODUCTION, BY COUNTIES, 1882-1949^a
(In tons)

County	Production	County	Production
Adams.....	46,186	Mercer.....	14,994,188
Bond.....	7,355,569	Monroe.....	8,284
Brown.....	57,117	Montgomery.....	77,114,045
Bureau.....	48,242,984	Morgan.....	181,454
Calhoun.....	96,247	Moultrie.....	2,032,236
Cass.....	212,477	Peoria.....	63,511,927
Christian.....	177,006,937	Perry.....	139,809,557
Clinton.....	37,400,886	Pike.....	5,081
Coles.....	198,932	Pope.....	1,562
Crawford.....	44,786	Putnam.....	10,071,893
Douglas.....	240,981	Randolph.....	59,950,593
Edgar.....	880,544	Richland.....	154
Effingham.....	796	Rock Island.....	3,846,169
Franklin.....	436,106,402	St. Clair.....	205,591,897
Fulton.....	145,024,132	Saline.....	172,432,649
Gallatin.....	4,059,958	Sangamon.....	229,772,661
Greene.....	620,767	Schuyler.....	2,796,266
Grundy.....	40,021,328	Scott.....	612,476
Hamilton.....	22,097	Shelby.....	4,119,747
Hancock.....	491,972	Stark.....	1,226,382
Hardin.....	40	Tazewell.....	17,449,141
Henry.....	18,479,915	Vermilion.....	145,504,995
Jackson.....	75,900,813	Wabash.....	186,144
Jasper.....	23,739	Warren.....	676,798
Jefferson.....	6,049,173	Washington.....	17,619,660
Jersey.....	119,300	White.....	1,676,741
Johnson.....	242,109	Will.....	34,939,992
Kankakee.....	1,948,786	Williamson.....	272,122,977
Knox.....	20,705,416	Woodford.....	7,793,778
LaSalle.....	65,406,455		
Livingston.....	10,078,475	Total (1882-1949).....	3,083,477,356
Logan.....	14,035,451	Estimated production	
Macon.....	11,000,468	(1833-1881).....	73,386,123
Macoupin.....	252,039,027	Total production (1833-1949)....	3,156,863,479
McDonough.....	2,634,755		
McLean.....	5,544,139		
Madison.....	151,207,880		
Marion.....	38,125,672		
Marshall.....	12,513,484		
Menard.....	13,241,714		

^a Source: Illinois State Department of Mines and Minerals.

1949 because of prolonged work suspensions. Under pre-war conditions there was a summer slump in production which was usually more pronounced in the producing districts of Illinois, Indiana, and western Kentucky than in Appalachian fields, which have the advantage of the lake cargo market during the summer months. High demand for coal during the war years resulted in full summer production in all coal-producing districts, except for the occurrence of work stoppages.

SIZES AND TYPES OF MINES

Coal production in Illinois is divided between underground and stripping mines in a ratio of about three to one. There is a gradual tendency toward a reduction of the

(Please turn to page 22)

TABLE 9.—ILLINOIS COUNTIES HAVING PRODUCED
100 MILLION TONS OF COAL, 1882-1949^a
(In tons)

Franklin.....	436,106,402
Williamson.....	272,122,977
Macoupin.....	252,039,027
Sangamon.....	229,772,661
St. Clair.....	205,591,897
Christian.....	177,006,937
Saline.....	172,432,649
Madison.....	151,207,880
Vermilion.....	145,504,995
Fulton.....	145,024,132
Perry.....	139,809,557

Total, 11 counties.....2,326,619,114
Total, all counties of the State.....3,083,477,356
Percent produced by 11 counties.....75.4

^a Source: Illinois State Department of Mines and Minerals.

TABLE 10.—PRODUCTION OF BITUMINOUS COAL IN THE UNITED STATES
AND IN ILLINOIS, BY MONTHS, 1949^a
(In thousands of tons)

Month	U.S. production	Percent of monthly average	Illinois production	Percent of monthly average	Illinois percent of U.S. total production
January.....	48,800	134.6	5,741	144.1	11.7
February.....	46,315	128.7	5,737	144.0	12.4
March.....	33,762	93.1	3,944	99.0	11.7
April.....	47,425	130.8	4,602	115.5	9.7
May.....	47,795	131.8	4,465	112.1	9.3
June.....	35,476	97.9	3,692	92.7	10.4
July.....	27,071	74.7	3,111	78.1	11.5
August.....	37,615	103.7	3,806	95.5	10.1
September.....	19,783	54.6	2,154	54.1	10.9
October.....	10,307	28.4	1,547	38.8	15.0
November.....	44,623	123.1	5,193	130.4	11.6
December.....	36,028	99.4	3,808	95.6	10.6
Total.....	435,000		47,800		
Monthly Average.....	36,250		3,983		^b 11.0

^a Source: U. S. Bureau of Mines estimated monthly production figures.

^b Average.



93 % produced east of
the Mississippi River
(black)



19 % produced in Eastern
Interior Coal Field (black)



11% produced in Illinois
(black)

FIG. 3.—The United States coal pile, 1947. The triangle represents 100 percent, a total of 630,624,000 tons. (Data from U. S. Bureau of Mines.)

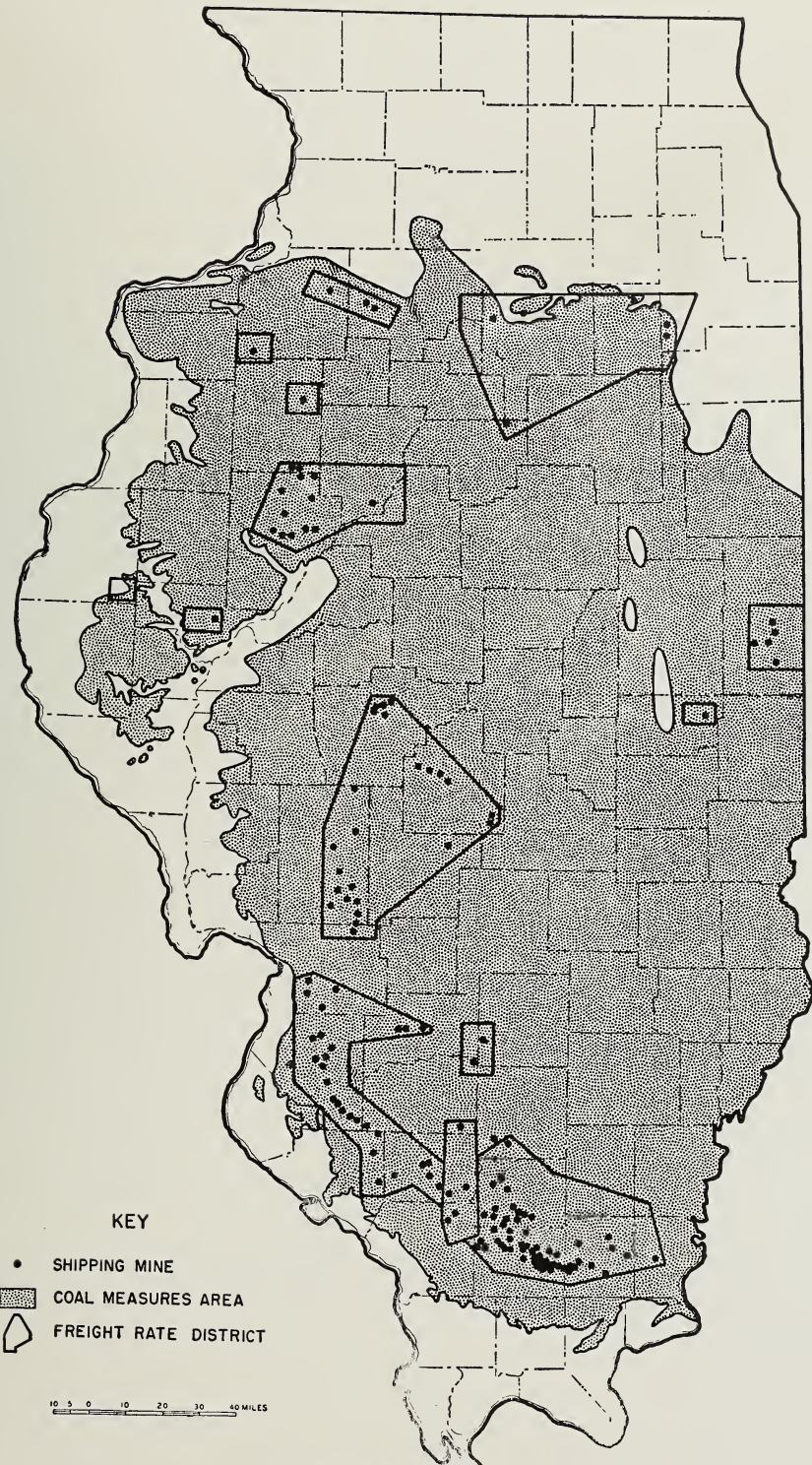


FIG. 4.—Shipping mines and freight districts of Illinois.

TABLE 11.—COAL PRODUCTION OF ALL ILLINOIS
(In

County	Shipping Mines			
	Number of mines	Tons mined underground	Tons mined strip	Total tons mined
Bureau	—	—	—	—
Christian	5	5,192,596	—	5,192,596
Clinton	3	214,956	—	214,956
Douglas	1	75,953	—	75,953
Edgar	—	—	—	—
Franklin	12	8,211,630	—	8,211,630
Fulton	12	79,973	4,500,992	4,580,965
Gallatin	2	26,802	—	26,802
Grundy	1	—	38,401	38,401
Hancock	1	—	53,727	53,727
Henry	2	111,804	488,644	600,448
Jackson	8	451,808	399,869	851,677
Jefferson	2	299,483	—	299,483
Jersey	—	—	—	—
Knox	3	25,385	907,760	933,145
LaSalle	2	12,965	39,503	52,468
Livingston	—	—	—	—
Logan	—	—	—	—
Macoupin	10	3,769,590	—	3,769,590
Madison	4	1,470,701	—	1,470,701
Marion	1	150,629	—	150,629
Marshall	—	—	—	—
McDonough	—	—	—	—
Menard	—	—	—	—
Montgomery	1	790,674	—	790,674
Morgan	—	—	—	—
Peoria	1	266,392	—	266,392
Perry	9	1,572,082	2,145,855	3,717,937
Randolph	3	714,779	857,504	1,572,283
St. Clair	11	1,434,239	455,314	1,889,553
Saline	13	3,320,991	557,934	3,878,925
Sangamon	3	1,123,104	—	1,123,104
Schuyler	1	—	19,214	19,214
Shelby	—	—	—	—
Tazewell	—	—	—	—
Vermilion	3	29,902	441,277	471,179
Warren	—	—	—	—
Washington	1	12,164	—	12,164
Will	2	—	1,109,555	1,109,555
Williamson	40	2,578,035	820,431	3,398,466
Woodford	—	—	—	—
Total	157	31,936,637	12,835,980	44,772,617

Source: Illinois State Department of Mines and Minerals.

MINES BY TYPE OF MINE AND BY COUNTIES, 1949^a
(tons)

Local mines				County totals		
Number of mines	Tons mined underground	Tons mined strip	Total tons mined	Number of mines	Total tons mined	Percent of state total
1	—	77,322	77,322	1	77,322	.16
—	—	—	—	5	5,192,596	10.91
—	—	—	—	3	214,956	.45
—	—	—	—	1	75,953	.16
1	9,107	—	9,107	1	9,107	.02
—	—	—	—	12	8,211,630	17.25
15	175,124	18,240	193,364	27	4,774,329	10.02
9	36,409	—	36,409	11	63,211	.13
2	4,086	50,633	54,719	3	93,120	.20
—	—	—	—	1	53,727	.11
3	21,122	—	21,122	5	621,570	1.31
6	26,264	4,635	30,899	14	882,576	1.85
—	—	—	—	2	299,483	.63
1	—	220	220	1	220	—
1	88,841	—	88,841	4	1,021,986	2.15
10	12,258	16,646	28,904	12	81,372	.17
2	—	7,408	7,408	2	7,408	.02
1	51,074	—	51,074	1	51,074	.11
—	—	—	—	10	3,769,590	7.91
5	236,353	—	236,353	9	1,707,054	3.58
—	—	—	—	1	150,629	.32
3	*152	749	901	3	901	—
2	150	—	150	2	150	—
4	24,309	—	24,309	4	24,309	.05
—	—	—	—	1	790,674	1.66
1	—	4,204	4,204	1	4,204	.01
31	242,493	29,692	272,185	32	538,577	1.13
3	11,472	—	11,472	12	3,729,409	7.83
3	16,114	—	16,114	6	1,588,397	3.33
12	144,119	845,044	989,163	23	2,878,716	6.04
8	33,743	—	33,743	21	3,912,668	8.21
6	186,342	—	186,342	9	1,309,446	2.75
7	16,607	8,151	24,758	8	43,972	.09
1	197	—	197	1	197	—
2	56,126	—	56,126	2	56,126	.12
16	153,897	52,628	206,525	19	677,704	1.42
1	2,629	—	2,629	1	2,629	—
3	17,224	—	17,224	4	29,388	.06
—	—	—	—	2	1,109,555	2.33
19	163,808	650	164,458	59	3,562,924	7.48
1	11,521	—	11,521	1	11,521	.02
					(Other)	.01
180	1,741,541	1,116,222	2,857,763	337	47,630,380	100.00

number of underground mines among the smaller sizes of these mines. Strip mines are increasing in number but not in proportion to total output (tables 11, 13, 14, 16). Local mines, although numerous, play a relatively unimportant role in the total coal supply of the State.

In table 17 the output of coal in Illinois from different seams is summarized for the first time. Figure 6 shows the distribution of producing coal seams, by counties.

COAL PRICES

Coal prices continued to rise in 1949 above 1948 levels. Table 18 gives prices of coal, at the mine, as of December 1949, for districts supplying the Illinois coal-market area, and comparable prices for December 1947 and 1948.

Average price of coal per ton at the mine, in the United States, for the period 1930 to 1949 is shown in figure 5.

COAL EXPORTS

Coal exports have declined from the high level of the war years, although they are still more than double the quantity of pre-war years (table 19).

A DEGREE-DAY MAP

Fuel needed for domestic heating is directly proportional to degree-days. In the market area served by the Illinois coal industry the degree-days in one heating season range from an average of 4,000 in southern Illinois to 10,000 in northern Minnesota.

Degree-days, which are the number of degrees that the average daily temperature falls below 65° F., are totaled for the heating season. Figure 8 is a generalized map of the distribution of degree-days in the Illinois coal-market area, and figure 9 is a degree-day map of Illinois with data for representative cities.

SUMMARY OF TABLE 11^a
(In tons)

Type of mines	1948		1949		
	Number of mines	Net tons produced	Number of mines	Net tons produced	Percent of total production
Strip mines					
Shipping.....	45	16,758,306	45	12,835,980	26.95
Local.....	30	1,117,234	43	1,116,222	2.34
Total.....	75	17,875,540	88	13,952,202	29.29
Underground mines					
Shipping.....	115	45,736,106	112	31,936,637	67.05
Local.....	152	2,555,159	137	1,741,541	3.66
Total.....	267	48,291,265	249	33,678,178	70.71
Grand total.....	342	66,166,805	337	47,630,380	100.00

^a Source: Illinois State Department of Mines and Minerals.

TABLE 12.—ILLINOIS COAL PRODUCTION BY COUNTIES, 1944-1948^a
(In tons)

County	1944	1945	1946	1947	1948
Brown.....	—	—	1,570	176	4
Bureau.....	120,463	133,349	98,764	700,385	99,127
Christian.....	7,896,234	7,492,841	6,415,384	7,300,494	7,918,145
Clinton.....	366,843	384,391	228,315	332,967	296,147
Douglas.....	—	—	363	50,354	114,311
Edgar.....	41,408	33,591	35,358	29,054	21,377
Franklin.....	18,173,694	17,247,446	14,470,904	14,790,608	13,310,042
Fulton.....	6,766,138	6,098,360	5,112,141	7,110,451	6,489,552
Gallatin.....	69,253	83,522	73,440	89,776	77,212
Greene.....	42	16	16	32	—
Grundy.....	30,237	142,321	207,190	211,581	171,665
Hancock.....	—	—	—	18,758	47,077
Henry.....	669,489	548,453	549,943	116,650	706,666
Jackson.....	3,026,855	2,920,208	2,399,210	1,327,234	1,242,101
Jefferson.....	478,057	623,677	493,435	533,612	570,676
Jersey.....	32	—	—	—	456
Knox.....	2,132,790	1,646,868	1,548,801	777,599	1,474,214
LaSalle.....	255,598	214,214	161,936	173,473	142,796
Livingston.....	3,133	8,886	6,509	6,503	6,013
Logan.....	52,338	60,852	51,822	53,658	49,528
Macon.....	38,167	29,683	21,769	1,539	—
Macoupin.....	5,518,050	5,328,029	4,985,062	5,037,173	4,281,292
Madison.....	2,114,632	2,129,748	2,140,014	2,218,667	2,091,468
Marion.....	302,274	169,460	177,335	265,006	238,667
Marshall.....	1,853	793	461	98	78
McDonough.....	773	598	938	1,260	317
Menard.....	46,791	52,916	42,831	34,489	28,162
Mercer.....	1,377	1,472	1,263	445	—
Montgomery.....	982,346	949,517	842,210	923,812	925,221
Morgan.....	—	—	—	—	27
Peoria.....	624,151	643,734	595,799	670,667	685,679
Perry.....	4,649,481	4,374,370	3,759,892	5,017,972	5,227,860
Randolph.....	2,695,442	2,808,523	2,289,892	2,660,827	2,500,002
Rock Island.....	1,941	972	1,061	413	643
St. Clair.....	3,115,436	3,020,478	3,062,582	3,440,300	3,098,062
Saline.....	4,504,148	4,557,481	4,233,318	4,151,746	4,454,755
Sangamon.....	2,911,012	2,498,072	2,132,845	2,258,105	2,219,443
Schuyler.....	257,116	202,515	148,015	120,751	147,252
Shelby.....	—	330	546	200	—
Stark.....	809	243	150	18	—
Tazewell.....	128,223	115,217	79,678	92,361	78,899
Vermilion.....	2,443,182	2,216,046	1,344,823	660,026	412,763
Warren.....	4,313	3,418	2,908	2,339	2,292
Washington.....	535,359	554,082	482,153	352,548	495,141
Will.....	1,779,552	1,735,678	1,416,726	1,707,956	1,664,282
Williamson.....	4,639,677	4,393,362	4,133,819	5,070,682	4,863,733
Woodford.....	21,322	21,198	15,891	12,476	13,658
Total.....	77,400,031	73,446,930	63,767,082	68,325,241	66,166,805

^a Source: Illinois State Department of Mines and Minerals.

TABLE 13.—AMOUNT AND VALUE OF COAL PRODUCED IN ILLINOIS, SHOWING NUMBER AND TYPE OF MINES, 1938-1949^a

Year	Number of Mines				Production (thousands of tons)				Value at Mines ^b							
	Shipping		Local		Total		Strip			Underground						
	Strip	Under-ground	Strip	Under-ground	Strip	Under-ground	All	Shipping		Local	Total strip	Shipping	Local	Total under-ground	Total pro-duction	
1938.....	25	124	74	746	99	870	969	10,059	620	10,679	28,384	3,324	31,708	42,387	63,581	\$ 1.50
1939.....	26	120	82	748	108	868	976	11,296	990	12,286	31,698	3,643	35,341	47,627	78,108	1.64
1940.....	27	112	53	696	80	808	888	12,025	1,255	13,280	34,047	3,955	38,002	51,282	86,667	1.69
1941.....	29	113	29	628	58	741	799	13,361	881	14,242	37,673	3,451	41,124	55,366	100,212	1.81
1942.....	28	114	30	513	58	627	684	14,827	1,111	15,938	46,297	3,511	49,808	65,746	125,575	1.91
1943.....	26	116	22	326	48	442	489	15,485	1,314	16,799	53,487	3,059	56,546	73,345	156,224	2.13
1944.....	30	135	18	224	48	359	406	17,108	968	18,076	56,850	2,474	59,324	77,400	172,602	2.23
1945.....	36	122	16	206	52	328	380	16,204	807	17,011	54,097	2,342	56,436	73,447	171,866	2.34
1946.....	36	124	24	189	60	313	373	14,303	905	15,208	46,630	1,929	48,559	63,767	166,432	2.61
1947.....	39	121	28	174	67	295	362	16,777	1,044	17,821	47,836	2,668	50,504	68,325	215,224	3.15
1948.....	45	115	30	152	75	267	342	16,758	1,117	17,875	45,736	2,555	48,291	66,167	*256,728	*3.88
1949.....	45	112	43	137	88	249	337	12,836	1,116	13,952	31,937	1,741	33,678	47,630	†192,901	†4.05

* Revised figures.

^a Source: Illinois State Department of Mines and Minerals.^b Based on U. S. Bureau of Mines average price per ton.^c Preliminary figures.

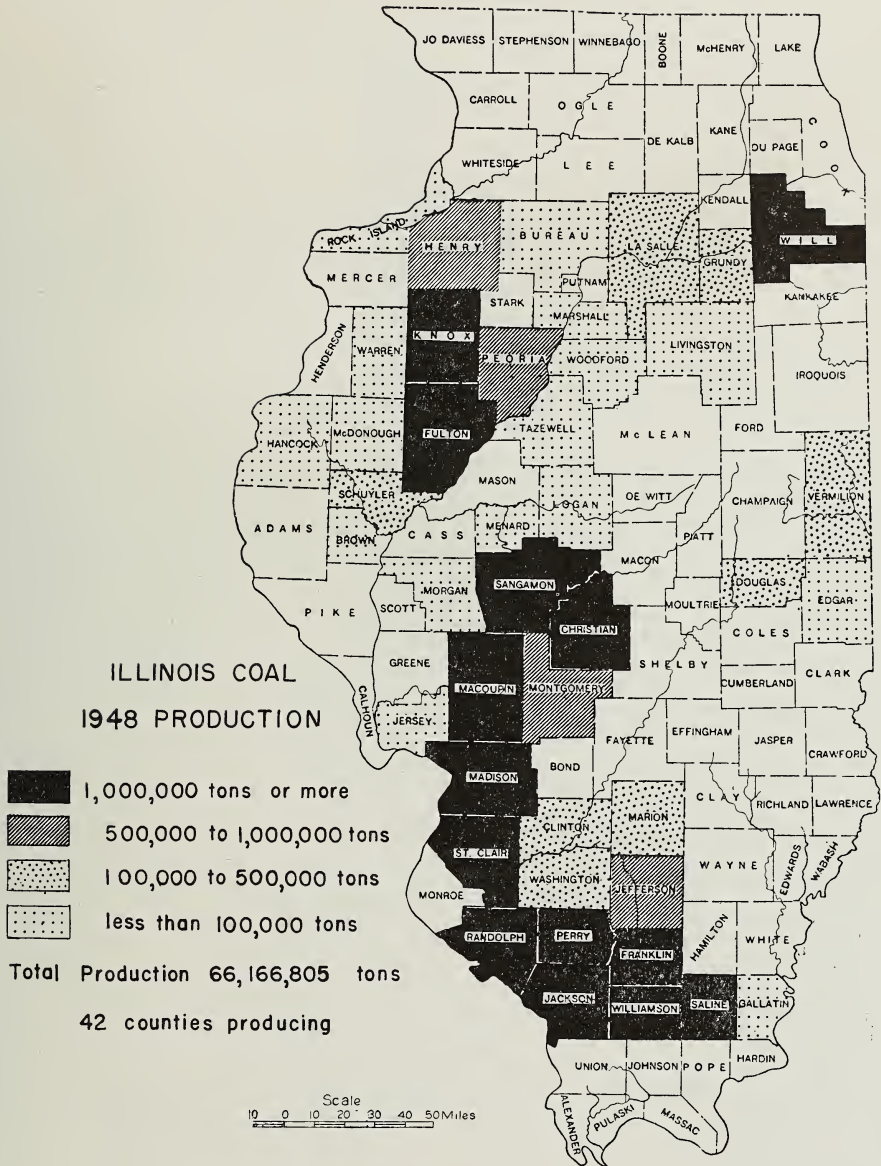


FIG. 5.— Illinois coal production, by counties, in 1948.
(Data from Illinois State Department of Mines and Minerals.)

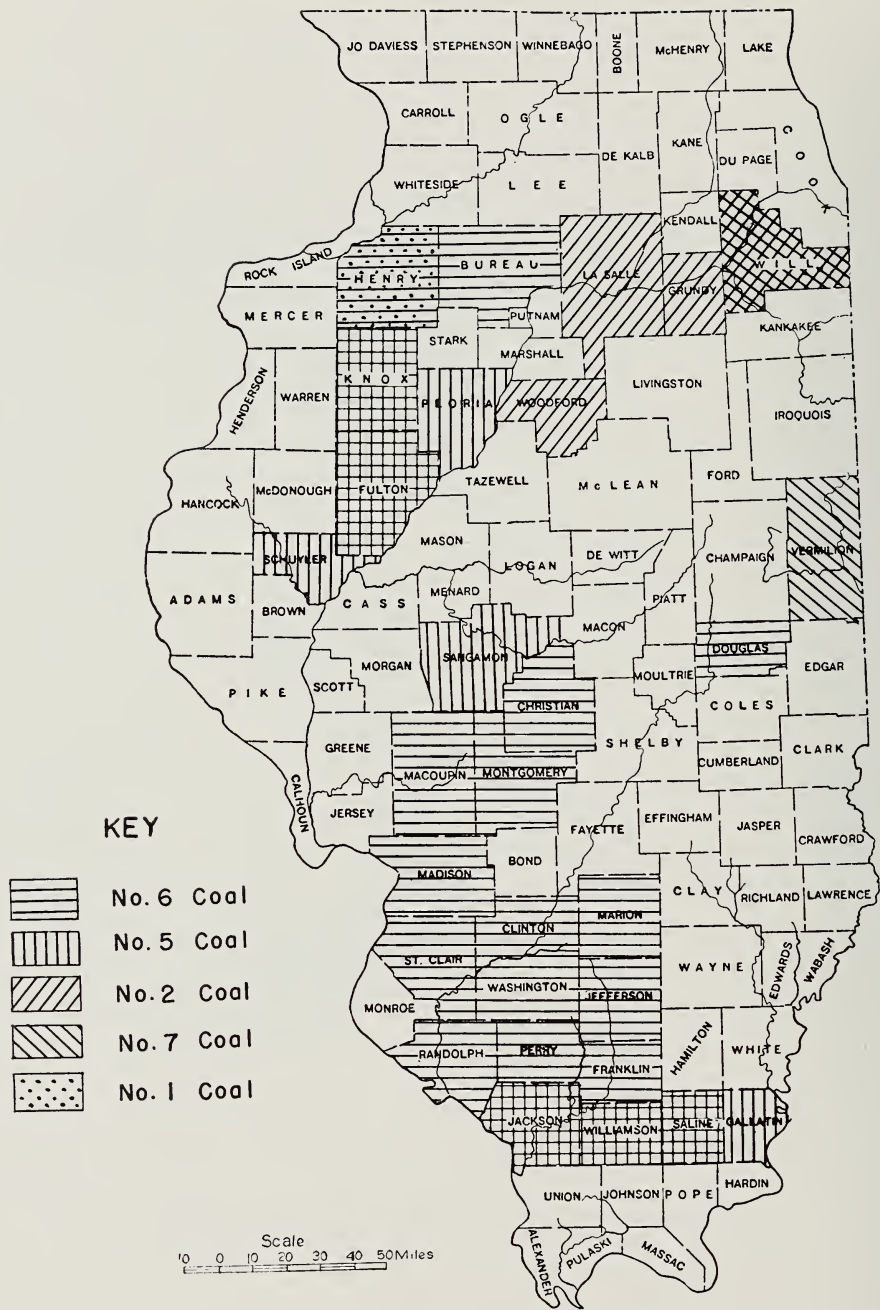


FIG. 6.—Coal beds mined in Illinois counties in 1948, based on production from shipping mines.

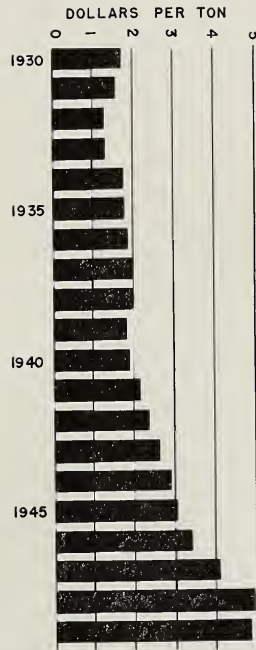


FIG. 7.—Average price per ton of bituminous coal at the mine, United States, 1930-1949. (Data from U. S. Bureau of Mines.)

TABLE 14.—PRODUCTION OF SHIPPING COAL MINES BY FREIGHT RATE DISTRICTS IN ILLINOIS, 1947-1948^{a, b}

Freight rate district	1947		1948	
	Tons	Percent of total	Tons	Percent of total
Alpha.....	95,797	0.1	88,351	0.1
Augusta.....	—	—	—	—
Belleville.....	8,895,986	13.8	8,559,061	13.7
Centralia.....	593,092	0.9	701,810	1.1
Danville.....	438,808	0.8	153,994	0.2
Duquoin.....	3,382,777	5.2	3,356,526	5.4
Fulton-Peoria.....	7,302,044	11.3	7,441,279	11.9
Mineral-Atkinson.....	694,002	1.1	694,720	1.1
Murdock.....	50,354	—	114,311	0.2
Northern Illinois.....	2,005,087	3.1	1,914,925	3.1
Rushville.....	107,900	0.2	127,308	0.2
Southern Illinois.....	23,982,728	37.1	22,558,845	36.1
Springfield.....	16,397,210	25.4	16,155,656	25.9
Victoria.....	666,842	1.0	606,597	1.0
Unclassified.....	—	—	21,029	—
Total.....	64,612,627	100.0	62,494,412	100.0

^a Figures from annual coal reports, 1947 and 1948, Illinois State Department of Mines and Minerals; freight rate districts from Illinois Geological Survey Coal Map, 1947, by G. H. Cady.

^b Subject to revision.

TABLE 15.—COAL PRODUCTION FROM ILLINOIS UNDERGROUND MINES, BY COUNTIES,
1944-1948^a
(In tons)

County	Total from mines producing 1,000 or more tons per year				
	1944	1945	1946	1947	1948
Bureau.....	19,543	14,029	11,375	6,383	—
Christian.....	7,896,234	7,492,841	6,415,384	7,300,494	7,918,145
Clinton.....	366,843	384,391	228,315	332,967	296,147
Douglas.....	—	—	—	50,354	114,311
Edgar.....	41,216	33,591	34,938	28,154	21,377
Franklin.....	18,173,694	17,247,446	14,470,904	14,790,608	13,310,042
Fulton.....	387,117	304,344	260,592	276,460	302,778
Gallatin.....	67,396	58,930	71,628	87,446	76,076
Henry.....	145,356	126,721	131,153	116,034	110,718
Jackson.....	2,441,334	2,404,921	1,905,683	877,628	785,357
Jefferson.....	478,034	623,647	493,400	533,570	570,676
Knox.....	192,489	155,834	107,673	110,666	128,371
LaSalle.....	135,260	98,018	79,948	65,097	56,050
Logan.....	51,594	60,852	51,822	52,778	49,528
Macon.....	38,167	29,683	21,769	1,539	—
Macoupin.....	5,518,050	5,328,029	4,985,062	5,037,173	4,281,292
Madison.....	2,114,632	2,129,748	2,139,327	2,218,667	2,091,468
Marion.....	302,274	169,460	177,335	265,006	238,667
Menard.....	45,802	52,916	42,731	34,489	27,362
Mercer.....	1,377	1,472	1,223	—	—
Montgomery.....	982,346	949,517	842,210	923,812	925,221
Peoria.....	621,879	641,360	593,994	667,526	665,972
Perry.....	1,863,796	1,543,689	1,265,962	2,360,155	2,429,131
Randolph.....	1,638,394	1,621,228	1,351,207	1,599,113	1,436,419
Rock Island.....	1,256	—	—	—	—
St. Clair.....	2,044,245	2,079,104	2,043,593	2,292,278	2,068,515
Saline.....	3,930,892	3,891,702	3,533,089	3,506,225	3,781,465
Sangamon.....	2,911,012	2,497,730	2,132,409	2,257,172	2,219,443
Schuyler.....	21,173	16,065	17,920	10,671	16,610
Tazewell.....	127,635	114,808	79,544	92,361	78,899
Vermilion.....	2,401,974	2,130,042	1,293,802	561,097	295,502
Warren.....	4,313	3,418	2,908	2,339	2,292
Washington.....	535,359	554,082	482,153	352,548	495,141
Williamson.....	3,778,599	3,641,409	3,257,070	3,665,906	3,473,351
Woodford.....	21,322	21,198	15,891	12,476	13,658
Total.....	59,300,607	56,422,225	48,542,014	50,489,192	48,279,984
Other underground production.....	23,302	13,509	17,264	14,710	11,281
Grand total.....	59,323,909	56,435,734	48,559,278	50,503,902	48,291,265

^a Source: Illinois State Department of Mines and Minerals.

TABLE 16.—COAL PRODUCTION FROM ILLINOIS STRIP MINES, BY COUNTIES, 1944-1948^a
(In tons)

County	Total from mines producing 1,000 tons or more per year				
	1944	1945	1946	1947	1948
Brown.....	—	—	1,570	—	—
Bureau.....	100,920	119,320	87,389	694,002	99,127
Fulton.....	6,373,429	5,791,266	4,848,280	6,831,618	6,185,745
Gallatin.....	—	22,919	—	—	—
Grundy.....	30,237	142,321	207,190	211,581	170,739
Hancock.....	—	—	—	18,758	47,077
Henry.....	523,436	421,667	418,731	—	595,593
Jackson.....	584,815	515,287	493,527	449,356	456,066
Knox.....	1,939,780	1,490,613	1,440,921	666,842	1,345,843
LaSalle.....	119,830	115,745	81,642	107,948	85,635
Livingston.....	2,328	8,670	6,189	6,453	5,255
Peoria.....	—	—	—	2,000	18,687
Perry.....	2,785,685	2,830,681	2,492,000	2,657,817	2,798,729
Randolph.....	1,057,048	1,187,295	938,685	1,061,714	1,063,583
St. Clair.....	1,069,697	940,966	1,018,397	1,147,172	1,028,870
Saline.....	573,256	665,779	699,629	644,911	672,710
Schuyler.....	235,508	185,891	128,296	109,010	128,962
Vermilion.....	39,431	82,849	48,395	97,433	116,001
Will.....	1,779,552	1,735,678	1,416,726	1,707,956	1,664,282
Williamson.....	858,568	751,809	875,786	1,403,891	1,388,073
Total.....	18,073,520	17,008,756	15,203,353	17,818,462	17,870,977
Other strip production.....	2,602	2,440	4,451	2,877	4,563
Grand total.....	18,076,122	17,011,196	15,207,804	17,821,339	17,875,540

^a Source: Illinois State Department of Mines and Minerals.

TABLE 17.—SUMMARY OF DATA CONCERNING ILLINOIS COAL SEAMS.^a

Coal Seam	Number		Kind of Opening				Manner of Work			Total tons produced
	Countries	Mines	Shaft (tons)	Drift (tons)	Slope (tons)	Strip (tons)	Pillar and room	Longwall	Strip	
No. 1.....	5	10	247,089	—	2,811	—	10	—	—	249,900
No. 2.....	9	24	79,552	338	2,753	1,962,464	8	1	13	2,043,107
No. 3.....	4	3	17,164	—	—	—	3	1	—	17,164
No. 5.....	14	143	4,387,351	456,480	3,508,223	7,324,565	116	—	27	15,676,619
No. 6.....	22	138	34,875,905	687,531	3,287,361	8,472,295	108	—	33	47,323,092
No. 7.....	5	24	515,712	78	224,917	116,216	16	—	6	856,923
Total.....	59	342	40,122,773	1,144,427	7,024,065	17,875,540	261	2	79	66,166,805

^a Source: Illinois State Department of Mines and Minerals, Coal Report for 1948.

TABLE 18.—COAL MINE PRICES PER TON, DECEMBER 1947, 1948, 1949^a

	1947	1948	1949
Southern Illinois			
Freight rate to Chicago, per ton	\$2.40	\$2.70	\$2.97
Lump	4.60 — 4.75	5.20 — 5.30	5.25 — 5.50
Furnace	—	5.20 — 5.30	5.25 — 5.50
Egg	4.60 — 4.75	4.90 — 5.15	5.00 — 5.25
Stove	—	4.90 — 5.15	5.00 — 5.25
Stoker (domestic)	—	5.60 — 5.75	5.75 — 5.90
Screenings (washed)	4.50 — 4.60	4.60 — 5.15	4.90 — 5.00
Central Illinois			
Freight rate to Chicago, per ton	\$2.10	\$2.40	\$2.64
Lump	4.25 — 4.60	4.85 — 5.05	4.85 — 5.05
Egg	4.25 — 4.45	4.75 — 4.95	4.85 — 5.05
Stoker (domestic)	—	4.85	—
Screenings	3.35 — 3.65	4.50 — 5.05	3.75 — 4.20
Indiana No. 4			
Freight rate to Chicago, per ton	\$2.10	\$2.28 — \$2.40	\$2.51 — \$2.64
Lump	4.25 — 4.60	5.00	4.85
Egg	4.25 — 4.60	5.00	4.85
Stoker	4.60 — 4.75	—	5.50
Screenings	3.50 — 3.75	4.75	4.25 — 4.50
Indiana No. 5			
Freight rate to Chicago, per ton	\$2.35	\$2.28 — \$2.55	\$2.51 — \$2.81
Lump	4.25 — 4.60	4.90	4.50 — 4.75
Egg	4.25 — 4.50	4.90	4.50 — 4.75
Stoker	—	—	4.25 — 4.75
Screenings	3.75 — 3.85	4.20	3.75
West Kentucky No. 6			
Freight rate to Chicago, per ton	\$2.70	\$3.00	\$3.30
Lump	4.65	5.30	—
Egg	4.65	5.15	—
Stoker (commercial)	—	4.95	5.15 — 5.30
Screenings	4.95	—	4.95
West Kentucky No. 9			
Freight rate to Chicago, per ton	\$2.70	\$3.00	\$3.30
Lump	4.40	4.80	4.60
Egg	4.40	4.65	4.50
Stoker (commercial)	—	4.70	—
Screenings	3.40	—	4.00 — 4.15
West Kentucky No. 11 (washed)			
Freight rate to Chicago, per ton	\$2.70	\$3.00	\$3.30
Furnace	3.95	4.70	—
Egg	3.95	4.35	4.50
Stoker (commercial)	4.00	4.80	4.50 — 4.65
Screenings	—	—	4.00 — 4.15
New River and Pocahontas			
Freight rate to Chicago, per ton	\$3.79	\$4.09	\$4.44
Lump	7.00	7.50 — 8.00	7.75 — 8.25
Egg	7.00	7.50 — 8.00	7.75 — 8.25
Stove	7.00	7.50 — 8.00	7.75 — 8.25
Nut	6.50	7.50 — 8.00	7.00 — 7.25
Pea	—	7.35 — 8.00	7.00 — 7.25
East Kentucky, West Virginia High Volatile			
Freight rate to Chicago, per ton	\$3.59	\$3.89	\$4.25
Block	6.75 — 7.00	7.50 — 8.25	7.10 — 8.25
Furnace	6.75 — 7.00	7.25 — 8.25	6.60 — 7.75
Egg	5.15 — 5.35	7.25 — 8.25	6.05 — 7.75
Stoker (commercial)	5.50	—	6.25 — 7.25

^a Source: Chicago Journal of Commerce.

TABLE 19.—UNITED STATES EXPORTS OF BITUMINOUS COAL, 1938-1949^a
(Thousands of tons)

Year	Amount	Year	Amount
1938.....	10,490.3	1944.....	26,032.3
1939.....	11,590.5	1945.....	27,956.2
1940.....	16,465.9	1946.....	41,208.6
1941.....	20,740.5	1947.....	68,667.0
1942.....	22,943.3	1948*.....	45,930.1
1943.....	25,836.2	1949 ^b	27,842.1

* Revised figures.
^a Source; U. S. Bureau of Mines.
^b Preliminary figures.

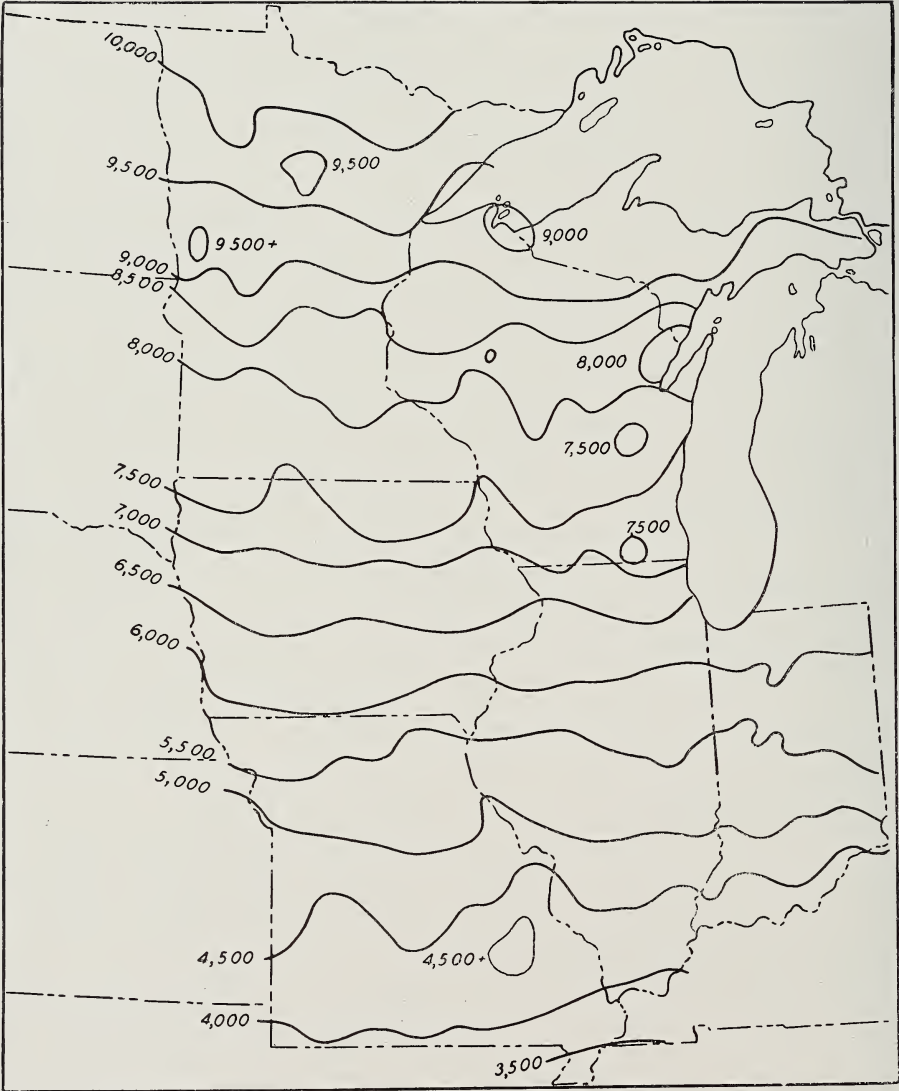


FIG 8.—A degree-day map of the Illinois coal market area. (Illinois Geol. Survey R. I. 46, fig. 4, 1937.)

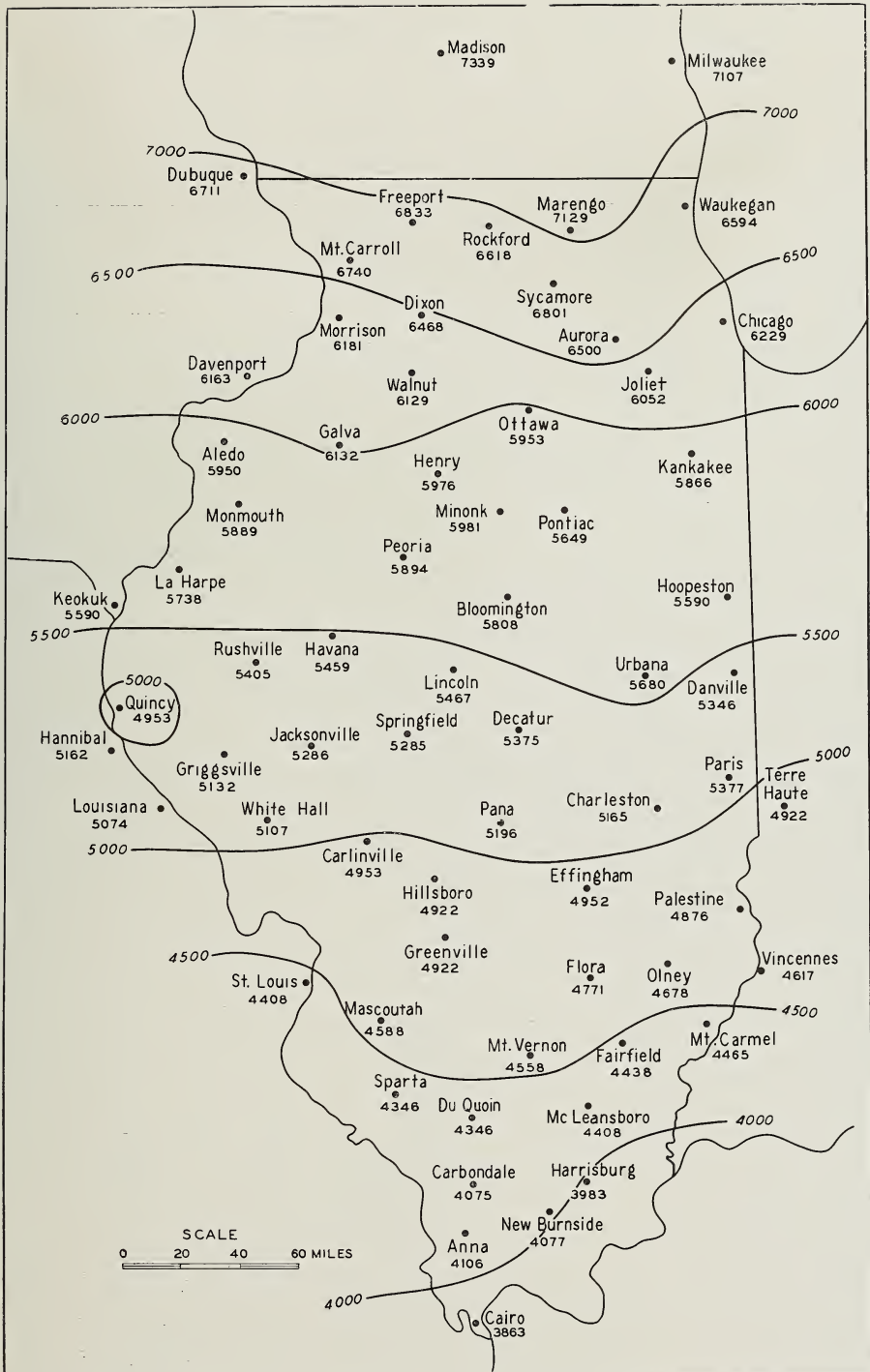


FIG. 9.—Degree-day map of Illinois and adjacent region showing cumulative average degree-days (based on data through 1941). Degree-days are the number of degrees of temperature that the average daily temperature falls below 65° F. totaled for the heating season.

TABLE 20.—COKE AND BY-PRODUCTS USED OR SOLD BY PRODUCERS IN ILLINOIS, 1948-1949^a

	1948			1949			Percent change in quantity from 1948	Percent change in value from 1948
	Quantity	Value at plants		Quantity	Value of plants			
		Thousands of dollars	Average		Thousands of dollars	Average		
Coke produced (M tons)	3,675	\$54,397	\$14.80	3,196	\$52,258	\$16.35	-13.0	- 3.9
Coal used (M tons)	5,221	48,963	9.38	4,591	44,743	9.75	-12.1	- 8.6
Coal per ton of coke (tons)	1.42	—	13.32	1.44	—	14.00	—	—
Yield of coke (percent of coal used)	70.39	—	—	69.61	—	—	—	—
Plants in existence Dec. 31	8	—	—	8	—	—	—	—
Ovens in existence Dec. 31	852	—	—	900	—	—	+ 5.6	—
Capacity (M tons)	3,810	—	—	3,905	—	—	+ 2.5	—
Coke used by producer in blast furnace (M tons)	1,733	23,923	13.80	1,595	24,867	15.58	- 7.9	+ 3.9
Coke used by producer for other purposes (M tons)	17	220	13.00	6	87	13.65	-64.7	-60.4
Coke sold for furnace use (M tons)	1,304	19,611	15.04	1,186	20,344	17.16	- 9.0	+ 3.7
Coke sold for foundry use (M tons)	373	7,373	19.77	243	4,976	20.47	-34.8	-32.5
Coke sold for domestic use (M tons)	100	1,207	12.07	105	1,326	12.67	+ 5.0	+ 9.8
Coke sold for other use (M tons)	99	1,309	13.22	81	1,020	12.65	-18.2	-22.0
Total coke used or sold (M tons)	3,626 +49	53,643 +754	14.80 —	3,216 -20	52,620 -362	16.35 —	-11.3 —	- 1.9 —
Coke inventory movement (M tons)								
Total coke produced (M tons)	3,675	54,397	14.80	3,196	52,258	16.35	-13.0	- 3.9
Surplus gas used or sold (Millions cu. ft.)	32,485	4,973	.153	29,081	4,575	.157	-10.5	- 8.0
Tar sold (M gal.)	33,445	3,469	.104	28,426	2,488	.087	-15.0	-28.3
Ammonia sulfate equiv. sold (M lbs.)	86,212	1,781	.021	75,634	1,572	.021	-12.3	-11.7
Light oil and derivatives sold (M gal.)	8,105	1,609	.20	6,940	1,360	.196	-14.4	-15.5
Total coke and by-products used or sold		\$66,229			\$62,253			- 6.0

^a Source: U. S. Bureau of Mines.

TABLE 21.—SOURCE OF COAL USED FOR PRODUCING COKE IN ILLINOIS, 1948-1949^a

Source	Tons of Coal	
	1948	1949
Arkansas.....	—	4,833
Illinois.....	261,338	274,033
Indiana.....	110,701	78,283
Kentucky.....	2,006,151	1,784,140
Oklahoma.....	—	1,451
Pennsylvania.....	175,209	29,652
Tennessee.....	—	1,149
Virginia.....	2,919	72,408
West Virginia.....	2,679,408	2,172,580
Total.....	5,235,726	4,418,529

^a Source: U. S. Bureau of Mines.TABLE 22.—ILLINOIS COAL SUPPLIED TO ILLINOIS AND INDIANA COKE PLANTS, 1938-1949^a
(In tons)

Year	To Illinois plants	To Indiana plants	Total
1938.....	106,667	—	106,667
1939.....	123,248	—	123,248
1940.....	214,845	—	214,845
1941.....	236,251	—	236,251
1942.....	227,197	128,490	355,687
1943.....	218,496	295,898	514,394
1944.....	141,067	4,493	145,560
1945.....	246,304	—	246,304
1946.....	214,545	176,205	390,750
1947.....	226,873	225,907	452,780
1948.....	261,338	344,153	605,491
1949.....	274,033	256,661	530,694

^a Source: U. S. Bureau of Mines.

PETROLEUM

NATIONAL PRODUCTION IN 1949

The production of petroleum in the United States in 1949 was 1,840,307,000 barrels, which is 9 percent below the production in 1948 (see table 23).

ILLINOIS PRODUCTION

Oil production in Illinois in 1949 was 64,583,000 barrels, compared with 64,808,000 barrels in 1948.

A history of oil production and drilling activity for the period since the new fields were discovered is given in table 24. The new fields discovered in 1949 are shown in figure 10, and Illinois production from

1905 to 1949 is shown in figure 11. The sharp rise reflects the opening of the Illinois basin fields in 1936.

IMPORTS

Crude oil is imported into the United States mainly from South America (fig. 12 and table 30). Venezuela is the largest contributor, followed by Columbia. Imports of oil from Curacao and Aruba are re-exports of crude oil originating in Venezuela. Of particular interest is the recent rise in shipments from the Persian Gulf area, especially from the small principality of Kuwait.

Crude oil prices are shown in table 29.

TABLE 23.—PRODUCTION OF CRUDE PETROLEUM BY STATES, 1945-1949^a
(Thousands of barrels)

State	1945	1946	1947	1948*	1949 ^b
Alabama.....	181	380	396	466	462
Arkansas.....	28,613	28,375	29,948	31,682	29,936
California.....	326,482	314,713	333,132	340,074	332,839
Colorado.....	5,036	11,856	15,702	17,862	^c 24,547
Florida.....	—	57	259	290	441
Illinois.....	75,094	75,297	66,459	64,808	64,583
Indiana.....	4,868	6,726	6,095	6,974	9,556
Kansas.....	96,415	97,218	105,132	110,908	101,868
Kentucky.....	10,325	10,578	9,397	8,801	8,656
Louisiana.....	131,051	143,669	160,128	181,458	190,715
Michigan.....	17,267	17,074	16,215	16,871	16,495
Mississippi.....	19,062	24,298	34,925	45,761	37,966
Montana.....	8,420	8,825	8,742	9,382	9,149
Nebraska.....	305	293	229	215	330
New Mexico.....	37,351	36,814	40,926	47,969	47,932
New York.....	4,648	4,863	4,762	4,621	4,248
Ohio.....	2,828	2,908	3,108	3,600	3,433
Oklahoma.....	139,299	134,794	141,019	154,455	151,902
Pennsylvania.....	12,515	12,996	12,690	12,667	11,374
Texas.....	754,710	760,215	820,210	903,498	743,990
West Virginia.....	2,879	2,929	2,617	2,692	2,839
Wyoming.....	36,219	38,977	44,772	55,032	46,935
Other States.....	87	84	124	99	111
Total.....	1,713,655	1,733,939	1,856,987	2,020,185	1,840,307

* Revised figures.

^a Source: U. S. Bureau of Mines.

^b Preliminary figures.

^c Includes Utah for 1949.

TABLE 24.—ILLINOIS WELL COMPLETIONS AND PRODUCTION, 1936-1949^a

Year	Completions ^b	Producing wells	Production (thousands of barrels)		
			New fields ^c	Old fields ^{c,d}	Total ^e
1936.....	93	52			4,445
1937.....	449	292	2,884	4,542	7,426
1938.....	2,536	2,010	19,771	4,304	24,075
1939.....	3,617	2,970	90,908	4,004	94,912
1940.....	3,755	3,080	142,969	4,678	147,647
1941.....	3,807	2,925	128,993	5,145	134,138
1942.....	2,017	1,179	101,837	4,753	106,590
1943.....	1,791	1,090 (20)	77,581	4,675	82,256
1944.....	1,991	1,229 (12)	72,946	4,467	77,413
1945.....	1,763	1,094 (15)	70,839	4,371	75,210
1946.....	2,362	1,387 (17)	70,174	5,123	75,297
1947.....	2,046	1,102 (22)	61,455	5,004	66,459
1948*.....	2,489	1,316 (21)	59,484	5,185	64,669
1949 ^g	2,730	1,436 (32)	58,653	5,930	64,583

* Revised figures.

^a Source: Illinois State Geological Survey.

^b Includes only oil and gas producers and dry holes.

^c Production figures based on information furnished by oil companies and pipe line companies.

^d Includes Devonian production at Sandoval and Bartleso.

^e From the U. S. Bureau of Mines.

^f Figures in parenthesis refer to number of producing wells included in total which had previously been completed as dry holes.

^g Preliminary figures.

TABLE 25.—PRODUCTION OF NATURAL GASOLINE
IN ILLINOIS AND OTHER STATES, 1948-1949^a
(In thousands of gallons)

State	1948	1949	Percent increase or decrease
Illinois.....	148,627	136,536	- 8.1
Kansas.....	107,563	112,295	+ 4.4
Kentucky.....	65,762	68,536	+ 4.2
Michigan.....	2,583	3,229	+25.0
Ohio.....	6,298	5,270	-16.3
Oklahoma.....	469,478	529,939	+12.9
Total.....	800,311	855,805	+ 6.9

^a Source: U. S. Bureau of Mines.

TABLE 26.—GASOLINE CONSUMPTION IN ILLINOIS AND THE UNITED STATES
BY YEARS 1945-1949^a
(Thousands of gallons)

	1945	1946	1947	1948*	1949 ^b
Illinois total.....	1,273,244	1,643,919	1,810,447	1,970,904	2,089,194
United States total.....	24,435,108	30,076,662	32,732,722	35,519,670	37,542,667

Percent of U.S. total consumed in Illinois in 1949..... 5.5

* Revised figures.

^a Source: American Petroleum Institute.

^b Preliminary figures.

TABLE 27.—ESTIMATES OF PROVED OIL RESERVES IN THE STATES SERVING THE ILLINOIS AREA, 1946–1950 ^{a, b}
(Millions of barrels)

State	1946	1947	1948	1949	1950
Illinois.....	350	351	355	393	468
Kansas.....	542	545	563	674	738
Louisiana.....	1,559	1,652	1,791	1,869	1,910
New Mexico.....	512	543	530	552	592
Oklahoma.....	889	898	953	1,250	1,330
Texas.....	10,835	11,646	11,778	12,484	13,510
Wyoming.....	600	589	679	716	692

^a Source: American Petroleum Institute (figures exclude condensate as of December 31, 1945).
^b Figures as of January 1, each year.

TABLE 28 —ESTIMATES OF NATURAL GAS RESERVES IN THE STATES SERVING THE ILLINOIS AREA, 1949–1950 ^{a, b}
(Millions of cubic feet)

State	1949	1950
Illinois.....	227,804	233,192
Kansas.....	14,407,832	14,089,560
Louisiana.....	23,977,520	26,687,811
New Mexico.....	5,606,361	6,241,003
Oklahoma.....	11,332,445	11,625,979
Texas.....	95,708,553	99,170,403

^a Source: American Gas Association.
^b Figures as of January 1, each year.

TABLE 29.—CRUDE OIL PRICES ^a

Illinois–Indiana–Kentucky–Ohio	
Bowling Green, Ky. (Owensboro-Ashland, 7–1–49).....	\$2.42
Butler Co., Ky. (Owensboro-Ashland, 7–1–49).....	2.55
Cleveland, O. & others (S. O. Ohio)....	3.10
Clinton Co., Ky. (Ashland O. & T.)....	2.60
Corning, O. (Seep, 5–6–49).....	2.70
Eastern Illinois (Ohio Oil) 1c below Schedule F.....	
Hitesville, Ky. & others (Carter).....	2.77
Illinois Basin (Ashland O. & R., Gulf, Magnolia, Ohio Oil, Shell, Sohio, Texaco).....	2.77
Indiana Basin (Ashland O. & R., Sohio)...	2.77
Lima, O. (S. O. Ohio).....	2.90
Loudon, Ill. (Carter).....	2.77
Mattoon, Ill. (Carter).....	2.77
Plymouth, Ill. (Ohio Oil, 7–1–49).....	2.44
Ragland Grade, Ky. (Ashland O. & T.)..	2.43
Somerset Grade, Ky. (Ashland O. & T.)..	2.83
Southern Illinois (Mohawk).....	2.77
Western Kentucky (Sohio).....	2.77

^a National Petroleum News, Vol. 42, No. 4, January 25, 1950. (Prices effective as of Dec. 6, 1947, except as herein noted.)

TABLE 30.—IMPORTS OF FOREIGN CRUDE PETROLEUM, 1945–1949 ^a
(Thousands of barrels)

From	1945	1946	1947	1948	1949 ^b
Colombia.....	8,610	8,351	10,944	8,542	11,448
Curacao and Aruba.....	5,445	5,198	5,125	4,707	3,991
Iran.....	—	—	—	4,507	1,107
Iraq.....	—	—	—	766	341
Kuwait.....	—	115	111	3,442	19,078
Mexico.....	2,501	2,869	5,578	3,601	6,033
Saudi Arabia.....	—	—	275	14,466	15,843
Venezuela.....	57,781	69,533	75,499	89,062	97,081
Total.....	74,337	86,066	97,532	129,093	154,922

^a Source: U. S. Bureau of Mines.
^b Subject to revision.

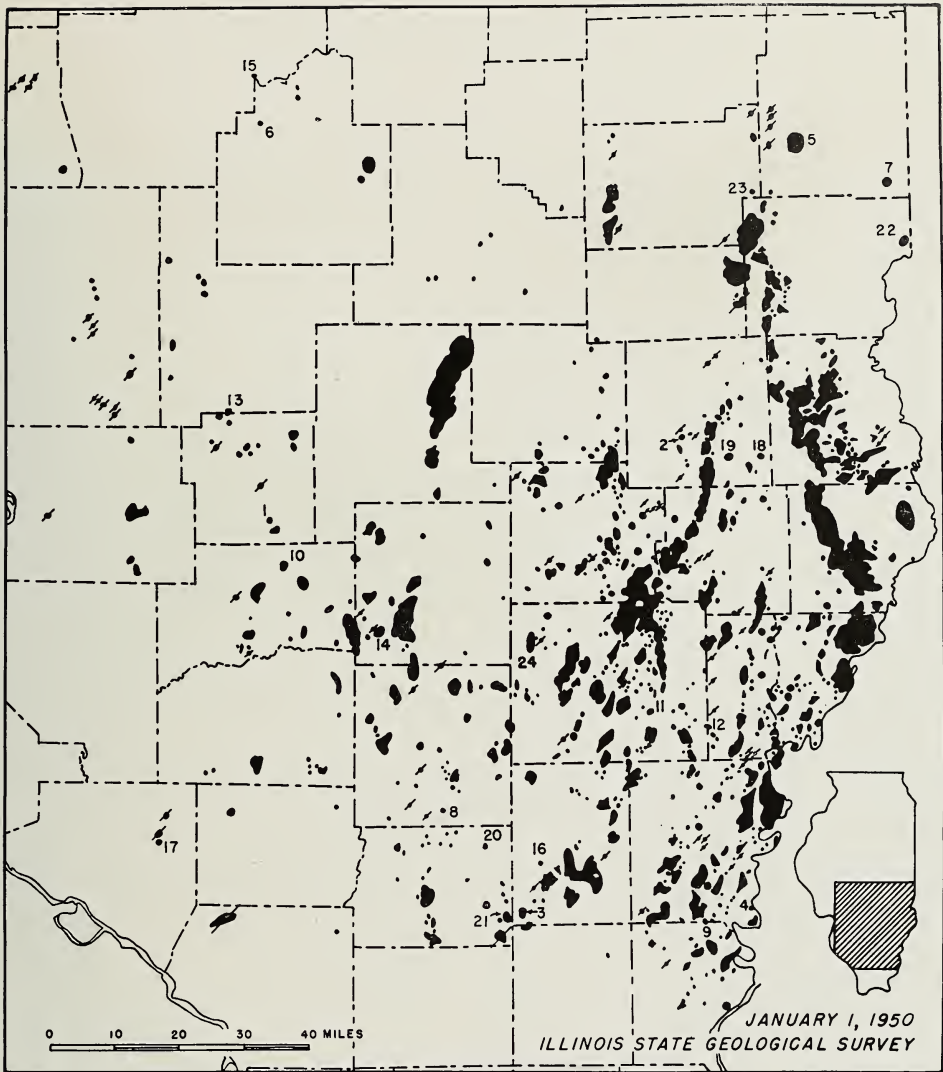


FIG. 10.— New oil pools discovered in Illinois, 1949.

- | | | |
|-----------------------|----------------------|------------------------|
| 1. Beaver Creek North | 9. Inman Central | 17. Sparta South |
| 2. Bogota North | 10. Keyesport | 18. Ste. Marie East |
| 3. Cantrell | 11. Merriam | 19. Ste. Marie West |
| 4. Dead River | 12. Mitchell | 20. Taylor Hill |
| 5. Dudley | 13. Panama | 21. Thompsonville East |
| 6. Edinburg | 14. Raccoon Lake | 22. Weaver |
| 7. Elbridge | 15. Roby | 23. Westfield North |
| 8. Ina North | 16. Rural Hill North | 24. Zenith South |

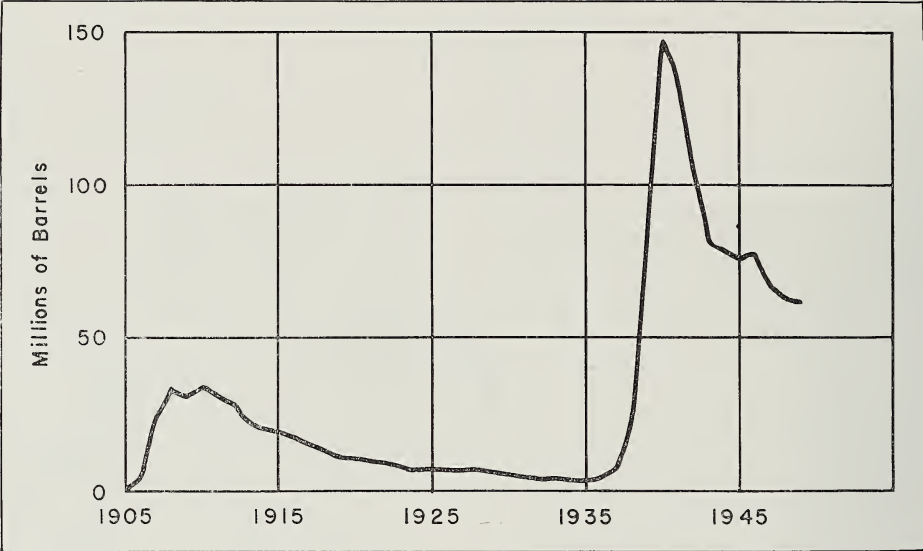


FIG. 11.—Illinois production of crude petroleum, 1905-1949.

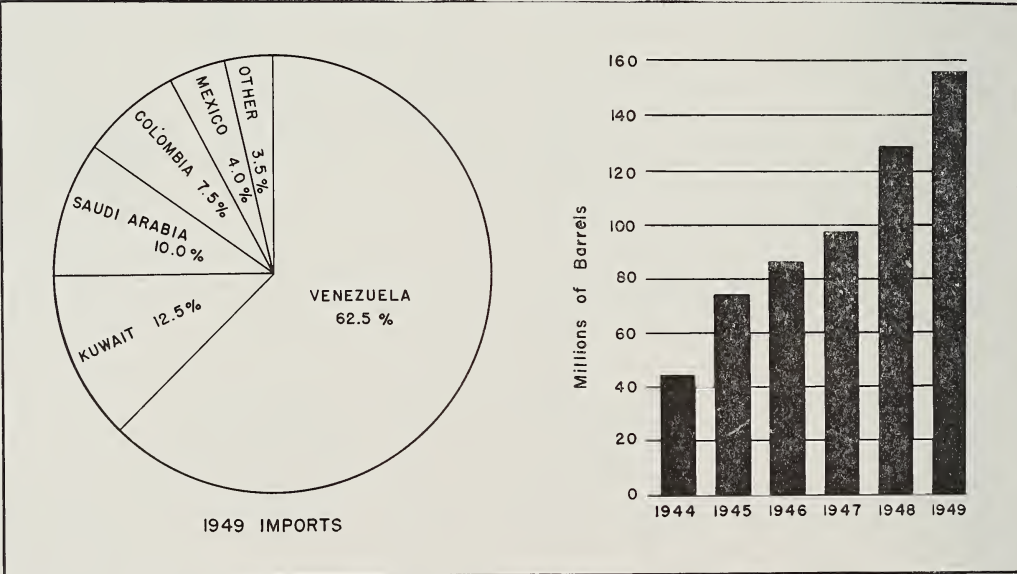


FIG. 12.—United States crude petroleum imports, 1944-1949.

STONE, ROCK PRODUCTS

LIMESTONE AND DOLOMITE

The limestone and dolomite sold or used by the Illinois producers in 1949 amounted to 16,822,000 tons, valued at the plants at \$20,472,900. This was a decrease of 9.5 percent in amount and 12.4 percent in value from 1948. Details by kind and by use are given in tables 32 and 33. No marl production was reported for 1949.

Producers reported a falling off in demand as well as increased costs of labor, repairs, equipment, and transportation, which tended to curtail production.

Stone for industrial uses declined 3.2 percent in amount and 10 percent in value. Metallurgical uses and flux showed the largest decrease in amount, 17.1 percent, whereas asphalt filler reflected the greatest percentage decrease in value, 37.7 percent. Stone for chemical uses showed a marked increase of 688 percent in amount and 301.4 percent in value.

Construction uses decreased 13.1 percent in amount and 14.2 percent in value. Rubble and stone for rough construction increased 131.4 percent in amount and 161.3 percent in value, and riprap increased 59.8 percent in amount and 31.9 percent in value. All other construction uses showed decreases, ranging in amount from 1.9 percent to 37.7 percent and in value from 14.5 percent to 43.4 percent.

Industrial uses constituted 39 percent of the total stone sold or used by producers in Illinois in 1949, and construction uses totaled 61 percent.

As in 1948, some of the smaller plants closed down, a few temporarily and others permanently. A number of new operations were reported, and several plants changed ownership. Of the 227 plants reporting in 1949, 7 percent had discontinued operations, 3 percent had changed ownership, and 12 percent were idle.

COMMERCIAL AND NONCOMMERCIAL
OPERATIONS

Commercial operations are shown separately from noncommercial operations,

which include the following: State of Illinois, county, township, municipal, and other government agencies. Purchases by government agencies from commercial producers are included in commercial operations.

Noncommercial operations in 1949 decreased 51 percent in amount from the previous year, and produced slightly less than 1 percent of the total tonnage of stone in Illinois for 1949. Of this stone 99 percent was used for concrete and paving, the balance for other construction.

AGSTONE USED IN ILLINOIS IN 1949

Reports of producers show that agstone (ground limestone and dolomite) used for soil improvement in Illinois during 1949 amounted to more than 4,913,000 tons, (Please turn to page 45)

TABLE 31.—AGSTONE USED IN ILLINOIS ANNUALLY, 1927-1949^a

Year	Tons	Value	Av. price per ton
1927.....	647,155	\$ 579,639	\$0.90
1928.....	565,001	511,005	.91
1929.....	947,798	843,693	.89
1930.....	868,426	740,785	.86
1931.....	268,874	241,376	.90
1932.....	164,933	140,969	.86
1933.....	227,466	165,667	.73
1934.....	491,644	319,604	.65
1935.....	379,555	268,139	.71
1936.....	1,114,466	871,862	.78
1937.....	1,310,513	1,279,981	.97
1938.....	1,251,263	1,247,150	1.00
1939.....	1,497,458	1,318,173	.88
1940.....	2,365,663	1,999,580	.84
1941.....	3,084,855	2,873,536	.93
1942.....	3,866,568	3,600,313	.93
1943.....	3,236,477	3,175,108	.98
1944.....	4,214,600	4,388,886	1.04
1945.....	4,287,568	4,627,705	1.08
1946.....	5,595,699	6,262,247	1.12
1947.....	5,380,411	6,683,210	1.24
1948.....	*5,427,087	*7,234,190	1.33
1949.....	4,913,517	6,465,948	1.31

* Revised figures.

^a U. S. Bureau of Mines, 1927-29; canvass by Illinois Agricultural Association 1930; canvass by Illinois Geological Survey, 1931-1949.

TABLE 32.—LIMESTONE AND DOLOMITE, BY USES, SOLD OR USED BY PRODUCERS IN ILLINOIS, 1948-1949^a

Use	Type of operation	1948				1949				Percent change in amount from 1948	
		Plants ^b	Amount tons	Value at plants		Plants ^b	Amount tons	Value at plants			
				Total	Av.			Total	Av.		
<i>Industrial</i>	Commercial...	158	5,174,493	\$6,960,527	\$1.35	157	4,821,490	\$6,379,068	\$1.32	- 6.9	
	Noncomm...	1	170	226	1.33	1	1,190	1,190	1.00	+ 600.0	
	Commercial...	12	1,263,584	1,609,113	1.27	8	1,047,887	1,313,679	1.25	+ 17.1	
	Commercial...	—	53,669	82,841	1.54	—	422,935	332,558	.79	+ 688.0	
	Chemical uses ^d ...	2	15,054	62,062	4.12	2	15,413	80,670	5.23	+ 2.4	
	Limestone whitening ^e ...	5	127,847	571,986	4.47	4	119,831	356,362	2.97	+ 6.3	
	Asphalt filler...	3	3,047	15,731	5.16	3	3,513	16,270	4.63	+ 15.3	
	Miscellaneous filler ^f ...	7	130,243	571,494	4.39	9	117,383	405,658	3.46	+ 9.9	
Other industrial uses ^g ...											
Total industrial uses...	Both...	161	6,768,107	9,873,980	1.46	158	6,549,642	8,885,455	1.36	- 3.2	
<i>Construction</i>	Concrete and paving...										
	Concrete and paving...	122	9,748,766	11,466,145	1.18	115	8,587,077	9,804,252	1.14	- 11.9	
	Concrete and paving...	7	259,208	206,660	.80	6	162,855	116,678	.72	- 37.2	
	Railroad ballast...	17	986,765	919,614	.93	14	664,492	630,814	.95	- 32.7	
	Riprap...	24	158,347	230,840	1.46	21	253,083	304,452	1.20	+ 59.8	
	Riprap...	3	68,505	64,226	.94	—	—	—	—	—	
	Rough construction...	3	788	838	1.06	—	—	—	—	—	
	Rubble...	5	14,712	21,188	1.44	6	35,872	57,556	1.60	+ 131.4	
	Flagging...	5	2,677	7,136	2.67	5	2,159	12,523	5.80	- 19.4	
	Other construction uses ⁱ ...	10	577,947	580,977	1.01	14	566,873	661,185	1.17	- 1.9	
	Other construction uses ^j ...	1	7,220	8,158	1.13	—	—	—	—	—	
	Total construction uses...	Both...	141	11,824,935	13,505,782	1.14	128	10,272,411	11,587,460	1.13	- 13.1
Total operations...											
Total operations...	Commercial...	171	18,257,939	23,100,492	1.27	171	16,658,008	20,355,047	1.22	- 8.8	
Total operations...	Noncomm...	9	335,103	279,270	.83	6	164,045	117,868	.72	- 51.0	
Total stone...		180	18,593,042	\$23,379,762	\$1.26	177	16,822,053	\$20,472,915	\$1.22	- 9.5	

^a Summary of joint canvass made by Illinois Geological Survey and U. S. Bureau of Mines.^b Number of plants reporting production.^c Includes refractory dolomite flux for blast furnaces and open-hearth plants, and stone for aluminum refining and other metallurgical uses.^d Includes stone for alkali works and glass factories.^e Includes limestone whitening for cartridge filler, caulking compounds, dye, grease, kalsomite, picture-frame mouldings, pottery, tanning, toothpaste, and for paint, putty, rubber, and other fillers; excludes asphalt filler.^f Includes pulverized stone for fertilizer, and other fillers.^g Includes stone for lime manufacturing, mineral food, and regrinding, and dust for coal mines.^h Includes in rubble.ⁱ Includes building stone, chips for driveways, stone sand, and stone for filter beds, and for unspecified uses.^j Unspecified uses.

TABLE 33.—LIMESTONE AND DOLOMITE, BY KINDS AND BY USES, SOLD OR USED BY PRODUCERS IN ILLINOIS, 1949^a

Use	Type of operation	Limestone				Dolomite			
		Plants ^b	Amount tons	Value at plants		Plants ^b	Amount tons	Value at plants	
				Total	Av.			Total	Av.
<i>Industrial</i>	Commercial.....	84	3,036,529	\$ 4,284,849	\$1.41	73	1,784,961	\$ 2,094,219	\$1.17
	Noncomm.....	1	1,190	1,190	1.00	—	—	—	—
	Commercial.....	4	187,879	273,140	1.45	4	486,008	41,040,539	1.21
	Commercial.....	—	422,935	332,558	.79	—	—	—	—
	Commercial.....	2	15,413	80,670	5.23	—	—	—	—
	Commercial.....	3	68,605	122,775	1.79	2	f 54,739	249,857	4.56
	Commercial.....	5	85,457	361,572	4.23	2	h 31,926	44,086	1.38
	Other industrial uses.....								
	Total industrial uses.....	85	3,818,008	5,456,754	1.47	73	2,731,634	3,428,701	1.26
	<i>Construction</i>	Commercial.....	62	3,407,921	4,086,086	1.20	53	5,179,156	5,718,166
Noncomm.....		2	3,812	3,812	1.00	4	159,043	112,866	.71
Commercial.....		4	95,907	114,106	1.19	10	568,585	516,708	.91
Commercial.....		17	129,039	141,190	1.09	4	124,044	163,262	1.32
Commercial.....		—	(1)	(1)	—	—	—	—	—
Commercial.....		5	32,288	55,982	1.73	4	5,743	14,097	2.45
Commercial.....		—	(1)	(1)	—	—	(1)	(1)	—
Commercial.....		9	509,239	599,045	1.18	5	k 57,634	62,140	1.08
Other construction uses.....									
Total construction uses.....		68	4,178,206	5,000,221	1.20	60	6,094,205	6,587,239	1.08
Total operations.....	Commercial.....	89	7,991,212	10,451,973	1.31	82	8,666,796	9,903,074	1.14
	Noncomm.....	2	5,002	5,002	1.00	4	159,043	112,866	.71
	Total stone.....	91	7,996,214	\$10,456,975	\$1.31	86	8,825,839	\$10,015,940	\$1.13

^a Summary of joint canvass made by Illinois Geological Survey and U. S. Bureau of Mines.^b Number of plants reporting production.^c Includes flux for open-hearth plants and blast furnaces, and stone for other metallurgical uses.^d Includes refractory dolomite for open-hearth plants, flux for blast furnaces, and stone for other metallurgical uses.^e Includes limestone whitening for cartridge filler, caulking compounds, dye, grease, kalsomine, picture-frame mouldings, pottery, tanning, tooth paste, and for paint, putty, rubber, and other fillers; excludes asphalt filler.^f Includes pulverized stone for asphalt, fertilizer, and other fillers.^g Includes stone for lime manufacturing, mineral food, and dust for coal mines.^h Includes stone for mineral food, regrinding, and dust for coal mines.ⁱ Included in rubble.^j Includes chips for driveways, building stone, stone sand, and stone for unspecified uses.^k Includes chips for driveways, stone sand, and stone for filter beds, and for unspecified uses.

TABLE 34.—AGSTONE USED IN ILLINOIS, 1948-1949^a

Agstone	1948*				1949				
	Plants ^b	Amount tons	Value at plants		Plants ^b	Amount tons	Value at plants		Percent change in amount from 1948
			Total	Av.			Total	Av.	
Produced in Illinois									
Limestone.....	92	3,163,354	\$4,533,852	\$1.43	85	3,037,719	\$4,286,039	\$1.41	— 4.0
Dolomite.....	66	2,008,817	2,424,409	1.21	73	1,784,961	2,094,219	1.17	—11.1
Marl.....	1	2,492	2,492	1.00	—	—	—	—	—
Total produced in Illinois.....	159	5,174,663	6,960,753	1.35	158	4,822,680	6,380,258	1.32	— 6.8
Less marketed in other states.....	11	57,705	78,248	1.36	8	45,541	59,425	1.30	—21.1
Produced and used in Illinois.....	159	5,116,958	6,882,505	1.35	158	4,777,139	6,320,833	1.32	— 6.6
Produced in other states and used in Illinois.....	12	310,129	351,685	1.13	10	136,378	145,115	1.06	—56.0
Total agstone used in Illinois.....	171	5,427,087	\$7,234,190	\$1.33	168	4,913,517	\$6,465,948	\$1.31	— 9.5

* Revised figures.

^a Summary of canvass made by Illinois Geological Survey in cooperation with Illinois Agricultural Association and Midwest Limestone Institute.^b Number of plants reporting production.

valued at the plants at \$6,466,000 (see table 34). This was a decrease of 9.5 percent in tonnage and 10.6 percent in value, an average decrease of two cents per ton. Illinois continued to rank first among all the states in the amount of liming material used for soil treatment.

Agstone continues to be an important factor in improving soil fertility. During 1949 the demand for this mineral material slackened, which some producers ascribed to lower farm prices. Agstone produced in Illinois and marketed in other states declined 21.1 percent in amount, and the tonnage produced in other states and used in Illinois decreased 56 percent (table 34).

During 1949 agstone was produced in 55 of the 102 counties of the State. Of the agstone used in Illinois during the year, 98 percent was produced in Illinois.

CEMENT

During 1949 sales of cement by producers in Illinois amounted to 8,200,100 barrels, valued at the plants at \$17,340,800. This was an increase of 4.1 percent in amount and 7.9 percent in value over 1948. The largest gain was in high-early-strength special Portland cement, which showed an increase of 89.2 percent in amount and 97.6 percent in value over the previous year (table 36).

The quantity of cement sold or used by producers in Illinois in 1949 exceeded the previous all-time high in 1930, when shipments totaled 7,952,000 barrels. The value, \$17,341,000, also sets a new record.

LIME

Sales of lime by producers in Illinois in 1949 amounted to 276,200 tons, valued at the plants at \$3,197,900, as shown in table 37. Of this tonnage 87 percent was quicklime and sintered dolomite, and 13 percent was hydrated lime.

Total lime decreased 2.4 percent in amount from 1948, but increased 6.6 percent in value, an average price increase of 98 cents per ton. Quicklime and sintered dolomite declined 3.1 percent in amount, but increased 6.1 percent in value, whereas

hydrated lime increased 2.2 percent in amount and 10 percent in value. The average price of quicklime and sintered dolomite showed an increase of \$1.00 per ton, and hydrated lime increased 82 cents per ton.

Sales of quicklime for building lime dropped 41.6 percent in amount and 34.2 percent in value, and hydrated building lime increased 2.1 percent in amount and 11.1 percent in value. Sintered dolomite and metallurgical lime gained 4.8 percent in amount and 12.4 percent in value.

Sales of quicklime for chemical and industrial uses declined 14 percent in amount and 3.1 percent in value. Hydrated lime for these same uses increased 2.2 percent in amount and 10 percent in value. Under chemical and industrial uses is included lime for water purification and softening, sewage and trade-wastes treatment, insecticides, fungicides, disinfectants, petroleum refining, tanneries, grease, glue, paper manufacturing, and for other purposes.

GANISTER AND SANDSTONE

Ganister is a siliceous material found in Union and Alexander counties of southern Illinois. It is used for refractory purposes.

Sandstone and miscellaneous stone from various parts of the State are used in road work and for foundations, riprap, and rubble, mostly in noncommercial operations.

Total sales and uses of ganister, sandstone, and miscellaneous stone by producers in Illinois are given in table 35. The figures for 1949 show a marked increase over 1948 both in tonnage and value.

TABLE 35.—GANISTER AND SANDSTONE SOLD OR USED BY PRODUCERS IN ILLINOIS, 1945-1949^a

Year	Amount tons ^b	Value at plants	
		Total	Average
1945.....	8,573	\$10,791	\$ 1.26
1946.....	8,336	10,900	1.30
1947.....	16,299	18,757	1.15
1948.....	200	1,000	5.00
1949.....	830	9,378	11.30

^a Summary of joint canvass made by Illinois Geological Survey and U. S. Bureau of Mines.

^b Includes ganister for refractory purposes, and sandstone for road work and for foundations, riprap, and rubble.

TABLE 36.—CEMENT SOLD OR USED BY PRODUCERS IN ILLINOIS, 1948-1949^a

Kind	1948*				1949				
	Plants ^b	Amount bbls. °	Value at plants		Plants ^b	Amount bbls. °	Value at plants		Percent change in amount from 1948
			Total	Av.			Total	Av.	
Standard Portland cement									
General use and moderate-heat.....	4	6,479,029	\$12,979,306	\$2.00	4	6,797,130	\$14,086,230	\$2.07	+ 4.9
Special Portland cements									
High-early-strength.....	4	146,564	354,658	2.42	4	277,360	700,985	2.53	+89.2
Other special Portlands ^d	3	947,811	1,866,759	1.96	3	902,482	1,858,515	2.06	- 4.8
Total Portland cement.....	4	7,573,404	15,200,723	2.01	4	7,976,972	16,645,730	2.09	+ 5.3
Less cement used in manufacture of masonry or mortar cements.....	4	189,689	381,275	2.01	4	229,868	480,424	2.09	+21.2
Total.....	4	7,383,715	14,819,448	2.01	4	7,747,104	16,165,306	2.09	+ 4.9
Masonry or mortar cements.....	4	492,043	1,258,985	2.56	4	453,044	1,175,476	2.59	- 8.0
Total cement.....	4	7,875,758	\$16,078,433	\$2.04	4	8,200,148	\$17,340,782	\$2.11	+ 4.1

* Revised figures.

^a Compiled from canvass made by U. S. Bureau of Mines.^b Number of plants reporting production.^c Weight per bbl. 376 lbs.^d Includes air-entrained, low-heat, and waterproof Portland cements.

CLAYS, CLAY PRODUCTS

Clay and clay products (including fuller's earth and silica refractories) sold and shipped by producers in Illinois in 1949 were valued at the plants at \$38,076,000, a decrease of 14.8 percent from the previous year. All groups in the clay and clay products classification showed decreases in both amount and value of production.

The figures for 1949 represent the reports of 98 percent of the producers on record. Of the total number, 85 percent of the plants were operating, 9 percent were idle, and 4 percent had either discontinued operations or had changed ownership during the year. Producers reported that the coal strike, unfavorable weather conditions, and competing materials were factors contributing to reduce production.

CLAYS, INCLUDING FULLER'S EARTH

In 1949, clays, including fuller's earth, sold and shipped as such amounted to 210,300 tons, valued at the mines or pits at \$994,800, a decrease of 19.5 percent in quantity and 23.1 percent in value over the previous year as shown in table 38. Clays used by their producers in the manufacture of clay products at their own plants are not included, but are reported in the resultant clay products in table 39.

Sales of fire clay totaled 179,300 tons, valued at the plants at \$834,000, a decrease of 6.7 percent in amount, and an increase of 2 percent in value. All other types of clay showed decreases in both amount and value. Shale and surface clay are grouped under one heading because fewer than three producers reported sales of each of these types of clay, and separate figures could not be shown without revealing individual operations. For the same reason fuller's earth, kaolin, and stoneware clay are combined under "other clays." Fuller's earth is used for oil refining, oil absorbents, fillers, and bonding foundry sands.

Clays sold and shipped for ceramic uses in 1949 amounted to 176,800 tons, valued at the mines or pits at \$641,300, a decrease of 2.7 percent in quantity but an increase of

21.6 percent in value over the preceding year. These clays were 84 percent in amount and 64.5 percent in value of the total clays sold and shipped in 1949. The largest ceramic use was for refractories, which represented 78.3 percent of the tonnage and 86 percent of the value of clays thus used.

In 1949 clays for nonceramic uses totaled 33,500 tons, valued at the plants at \$353,500, a decrease of 57.8 percent in amount and 53.9 percent in value from the previous year. These uses included, among others, bonding foundry sands, fillers, and modeling clay.

CLAY PRODUCTS, INCLUDING
SILICA REFRACTORIES

Clay products, including silica refractories, sold and shipped by producers in Illinois in 1949 were valued at the plants at \$37,081,300, a decrease of 14.6 percent from the all-time high established in 1948. Refractories represented 20 percent of the value of clay products sold, or 1 percent more than in 1948; sales of structural clay products made up 41 percent, 1 percent more than in the previous year; and white-ware and pottery 39 percent, a decrease of 2 percent from 1948 (table 39).

Refractories. — Refractories, clay and silica, totaled 214,300 tons, valued at the plants at \$7,622,000, a decrease of 18.5 percent in amount and 8 percent in value from 1948. However, they increased in price an average of \$4.07 per ton. All refractory products showed decreases in both quantity and value. Fire brick and shapes, 89.2 percent of the total tonnage and 85.3 percent of the total sales of refractory products, declined 13 percent in amount and 5.3 percent in value from the previous year.

Structural clay products. — Structural clay products amounted to 1,481,900 tons, valued at the plants at \$15,077,800, a decrease of 16.8 percent in quantity and 12.3 percent in value from 1948. All types of structural clay products showed decreases in amount and value.

TABLE 39.—CLAY PRODUCTS (INCLUDING SILICA REFRACTORIES) SOLD AND SHIPPED BY PRODUCERS IN ILLINOIS, 1948-1949^a

Kind and use	1948				1949			
	Plants ^b	Amount	Value at plants		Plants ^b	Amount	Value at plants	
			Total	Av.			Total	Av.
<i>Refractories, clay and silica</i>								
Firebrick and shapes.....	7	tons 219,860	\$ 6,867,329	\$31.24	8	tons 191,178	\$ 6,503,529	\$34.02
Plastic and castable refractories.....	4	13,723	733,130	53.42	7	11,335	657,862	58.04
Cements and mortars.....	6	8,062	482,792	59.88	4	7,979	402,657	50.46
Other refractories.....	4	21,226	198,218	9.34	4	3,785	57,999	15.32
Total refractories.....	11	262,871	8,281,469	31.50	12	214,277	7,622,047	35.57
<i>Structural clay products</i>								
Common brick.....	24	thous. 401,659	7,234,046	14.99	24	341,809	6,199,189	18.14
Face brick.....	15	160,403	4,526,560	28.22	16	145,062	4,428,595	30.53
Paving block.....	—	—	—	—	1	28	1,330	13.56
Total (in equivalent tons).....	27	tons 1,405,155	11,760,606	8.36	28	1,217,276	10,629,114	8.73
Drain tile.....	17	155,716	1,926,500	12.39	20	135,415	1,644,075	12.14
Structural tile.....	13	66,069	662,073	10.02	14	62,179	639,849	10.29
Sewer pipe, flue lining, wall coping.....	3	32,636	1,044,220	32.00	5	29,922	917,384	30.66
Terra cotta and glazed block ^e	—	—	—	—	—	—	—	—
Other structural products.....	5	121,322	1,807,140	14.90	4	37,058	1,247,418	33.66
Total structural products.....	43	1,780,898	17,200,539	9.66	42	1,481,850	15,077,840	10.18
<i>Whiteware and pottery</i>								
Earthenware (flowerpots).....	3	—	329,032	—	3	—	363,775	—
Stoneware.....	3	—	1,122,449	—	3	—	1,023,905	—
Garden pottery ^d	—	—	—	—	—	—	—	—
Dinnerware and art china.....	3	—	1,331,229	—	3	—	2,490,851	—
Art pottery.....	4	—	3,124,277	—	4	—	3,210,893	—
Vitreous-china plumbing fixtures.....	3	—	9,901,865	—	2	—	5,632,158	—
Porcelain and other whiteware.....	3	—	2,115,323	—	4	—	1,659,791	—
Total whiteware and pottery.....	17	—	17,924,175	—	16	—	14,381,373	—
Total clay products.....	70	—	43,406,183	—	68	—	37,081,260	—
Total clays and clay products.....	80	—	\$44,699,568	—	76	—	\$38,076,011	—
(Tables 38 and 39)								

^a Summary of canvass made by Illinois Geological Survey.^b Number of plants reporting production.^c Included in "Other structural products."^d Included in "Dinnerware and art china."

Common brick sold were valued at the plants at \$6,199,200, a decrease of 14.3 percent in value from 1948, although the average price per thousand increased \$3.15.

Face brick sold in 1949 had a value of \$4,428,600, a decrease of 2.2 percent in value from the previous year, but it showed an increase of \$2.31 per thousand.

Drain tile sold in 1949 amounted to 135,400 tons, valued at the plants at \$1,644,100. It declined 14.7 percent in value, an indicated average decrease of 25 cents per ton.

Structural tile sold totaled 62,200 tons and was valued at the plants at \$639,800, showing a decrease of 5.9 percent in amount and 3.4 percent in value from 1948, but an average increase of 27 cents per ton.

Sewer pipe, flue lining, and wall coping sold amounted to 29,900 tons and were valued at the plants at \$917,400, a decrease of 8.3 percent in amount and 12.1 percent in value from 1948, which reflected an average reduction of 34 cents per ton.

Other structural products, including facing block, haydite, terra cotta, and glazed block, totaling 37,000 tons, were valued at \$1,247,400 and showed decreases of 69.5 percent in amount and 31 percent in value, or an average decrease of 52 cents per ton from 1948.

Whiteware and pottery. — Whiteware

and pottery sold and shipped by producers in Illinois in 1949 were valued at \$14,381,400. This was a decrease of 19.8 percent from the all-time high record of whiteware and pottery sales established in 1948. This group was the only one of the clay products which showed increases in value over 1948 for some of its products.

Earthenware, dinnerware and art china, and art pottery showed increases in value of 10.6 percent, 87.1 percent, and 2.8 percent, respectively, while stoneware, vitreous-china plumbing fixtures, and porcelain and other whiteware decreased in value 8.8 percent, 44.2 percent, and 21.5 percent.

Dinnerware and art china, valued at \$2,490,900, showed the largest percentage increase, 87.1 percent.

Vitreous-china plumbing fixtures, valued at \$5,630,200, were 39.2 percent of the total sales of whiteware and pottery, but showed a decrease of 44.2 percent in value from 1948.

Art china, dinnerware, and garden pottery are grouped under one heading, as fewer than three producers reported sales of each of these products, and separate figures could not be shown without revealing individual operations.

Other whiteware included electric porcelain, chemical stoneware, and miscellaneous products.

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SAND AND GRAVEL

SILICA SAND

The amount of silica sand sold or used by producers in Illinois in 1949 totaled 1,990,100 tons, valued at the plants at \$4,138,300, as shown in table 41. This was a decrease of 20.5 percent in amount and 13.8 percent in value, but an average increase of 17 cents per ton from 1948. Illinois ranks first among the states in the production of this mineral material.

Silica sand is used almost entirely for industrial purposes and, as in 1948, less than 1 percent of that sold or used by producers in Illinois was for construction work. Total industrial uses decreased 20.5 percent in amount and 13.8 percent in value. Glass sand was 46.8 percent of the tonnage of silica sand sold or used in 1949. It totaled 932,300 tons, valued at the plants at \$1,866,000, a decrease of 5 percent in amount and an increase of 1.6 percent in value, and reflected an average increase of 13 cents per ton over 1948. Steel molding sand, blast sand, grinding and polishing sand, and engine filter sands decreased in both amount and value, although steel molding sand showed an average increase of 17 cents per ton over 1948. "Other silica sand" included sand for unspecified uses and that undistributed by the producer.

OTHER SAND AND GRAVEL

Sand, other than silica sand, and gravel sold or used by producers in Illinois in 1949 amounted to 15,045,000 tons, and was valued at the plants at \$10,387,200, a decrease of 0.3 percent in amount from the previous year and an increase of 1.9 percent in value. The average value of 69 cents per ton is the highest recorded since 1920.

Producer reports on the sand and gravel business varied greatly according to local conditions. Some stated that demand was good, prices steady, wages up, and that there were no labor troubles. Others reported that the demand was slow; that strikes had held up production; that wage increases and the rising cost of repairs and

equipment had prevented lowering of sand and gravel prices; that in some instances keen competition had increased price cutting; that the demand for road gravel was much less, owing to the shortage of funds of local road districts.

Of the total tonnage of sand (other than silica sand) and gravel reported in 1949, 5.4 percent was from government-and-contractor operations, which includes sand and gravel produced either by the State of Illinois, counties, townships, and municipalities, or by contractors expressly for their use. Purchases by government agencies from commercial producers are included in commercial operations.

"Other sand" amounted to 6,631,200 tons, and was valued at the plants at \$4,919,200, an increase of 15.6 percent in amount and 18.8 percent in value from 1948. Paving and highway-structures sand (commercial operations) showed the largest increase in tonnage, 615,000 tons, or 41 percent, with an increase of 40.1 percent in value over the previous year.

Structural sands (commercial operations) and paving and highway-structures sand (government-and-contractor operations) increased in both quantity and value. Railroad-ballast sand decreased 9 percent in amount from 1948, but increased 5.5 percent in value; other construction sands decreased 2.8 percent in amount from the previous year, and showed a very slight increase in value, 0.2 percent. Natural-bonded molding sand declined 25.8 percent in amount and 18.1 percent in value; engine sand decreased 18.1 percent in amount and 13.8 percent in value (table 40).

Gravel was 56 percent of the total tonnage of "other sand and gravel" sold or used by producers in Illinois in 1949. It amounted to 8,413,800 tons, and was valued at the pits at \$5,468,000, showing a decrease of 10 percent in amount and 9.8 percent in value from the previous year. Structural gravel (commercial operations) increased 13.7 percent in amount and 8.7 percent in value over 1948. Structural

gravel (government-and-contractor operations) decreased 1.6 percent in amount from the preceding year, but gained 15 percent in value. Gravel for all other uses showed decreases in both amount and value (table 40).

Total sand (including silica sand) and gravel amounted to 17,035,100 tons, valued at the plants at \$14,525,500, a decrease of

3.2 percent in amount and 3.1 percent in value from 1948.

Of the 204 commercial plants reporting on 1949 operations, 2 percent had discontinued business during the year, 1 percent had changed ownership, 15 percent were idle, and 82 percent reported production. Twenty-two new operations were listed during the year.

Total gravel.....	136	8,457,573	5,484,079	.65	138	7,653,370	5,009,998	.65	— 9.5
Total gravel.....	27	895,702	575,366	.64	29	760,432	458,028	.60	— 15.1
Total gravel.....	163	9,353,275	6,059,445	.65	167	8,413,802	5,468,026	.65	— 10.0
Total sand (other than silica sand) and gravel.....	147	14,171,277	9,596,678	.68	153	14,238,689	9,899,276	.70	— 0.5
Total sand (other than silica sand) and gravel.....	31	920,400	596,435	.65	30	806,319	487,925	.61	— 12.4
Total sand (other than silica sand) and gravel.....	178	15,091,677	10,193,113	.68	183	15,045,008	10,387,201	.69	— 0.3
Summary—Sand (including silica sand) and gravel.....									
(Tables 40 and 41)									
Total industrial sands (including silica sand).....	30	2,701,544	5,035,972	1.86	27	2,156,341	4,366,259	2.02	— 20.2
Total construction sands and gravel...	175	14,894,661	9,952,710	.67	178	14,878,789	10,159,278	.68	— 0.1
Total sand (including silica sand) and gravel.....	192	17,596,205	\$14,988,682	\$0.85	196	17,035,130	\$14,525,537	\$0.85	— 3.2
(Tables 40 and 41)									

^a Summary of joint canvass made by Illinois Geological Survey and U. S. Bureau of Mines.

^b Number of plants reporting production.

^c Excludes highway structures.

TABLE 41.—SILICA SAND SOLD OR USED BY PRODUCERS IN ILLINOIS, 1948-1949^a

Use	Type of operation	1948				1949				
		Plants ^b	Amount tons	Value at plants		Plants ^b	Amount tons	Value at plants		Percent change in amount from 1948
				Total	Av.			Total	Av.	
<i>Industrial sands</i>	Commercial.....	4	981,483	\$1,837,484	\$1.87	3	932,307	\$1,866,026	\$2.00	- 5.0
	Steel molding sand.....	14	1,192,700	1,978,784	1.66	12	674,467	1,235,450	1.83	-43.5
	Blast, grinding and polishing sands.....	3	126,987	498,568	3.93	2	81,612	256,661	3.14	-35.7
	Engine and filter sands ^e	2	42,770	106,710	2.49	2	19,856	42,571	2.14	-53.6
	Other silica sand ^d	4	143,332	339,907	2.37	3	268,878	710,785	2.64	+87.6
	Total.....	14	2,487,272	4,761,453	1.91	13	1,977,120	4,111,493	2.08	-20.5
<i>Construction sands</i>	Structural sands.....	—	17,256	34,116	1.98	—	13,002	26,843	2.06	-24.7
	Total silica sand.....	14	2,504,528	\$4,795,569	\$1.91	13	1,990,122	\$4,138,336	\$2.08	-20.5

^a Summary of joint canvass made by Illinois Geological Survey and U. S. Bureau of Mines.^b Number of plants reporting production.^c Includes fire or furnace sand.^d Except sand ground for silica flour, which is given in table 42, "Ground Silica."

SILICA AND TRIPOLI

GROUND SILICA

Ground silica or silica flour is made by fine grinding of washed silica sand. During 1949 the quantity of this material sold or used by producers in Illinois amounted to 217,600 tons and was valued at the plants at \$1,887,100, as shown in table 42. This was a decrease of 2.4 percent in amount from the previous year and an increase of 1.2 percent in value, and represents an average gain of 30 cents per ton over 1948. Illinois continued to rank first among the states in the production of ground silica. It is used as an abrasive, as a filler, and in

foundries and in the ceramic industry, where it is known as "silica flour" or "potter's flint." Ground silica for abrasives made up 41 percent of the total tonnage and 41.2 percent of the value for 1949.

TRIPOLI

Tripoli ("amorphous" silica) is used as an abrasive, polish, filler, and for many other purposes. The amount and value of this material sold or used by producers in Illinois in 1949 are not available, but figures for 1945-1947 are given in table 43.

TABLE 42.—GROUND SILICA SOLD OR USED BY PRODUCERS IN ILLINOIS, 1948-1949^a

Use	1948			1949			
	Amount tons	Value at plants		Amount tons	Value at plants		Percent change in amount from 1948
		Total	Average		Total	Average	
Abrasive.....	90,969	\$ 742,221	\$8.16	89,168	\$ 777,712	\$8.72	— 2.0
Enamel and glass.....	9,605	73,898	7.69	8,033	60,843	7.57	— 16.4
Foundry and filler.....	56,516	476,009	8.42	37,282	335,033	8.99	— 34.0
Pottery, porcelain, and tile.....	14,751	121,028	8.20	34,201	289,829	8.47	+131.8
Other uses and undistributed.....	50,986	451,429	8.85	48,893	423,728	8.67	— 4.1
Total.....	222,827	\$1,864,585	\$8.37	217,577	\$1,887,145	\$8.67	— 2.4

^a Summary of joint canvass made by Illinois Geological Survey and U. S. Bureau of Mines.

TABLE 43.—TRIPOLI ("AMORPHOUS" SILICA) SOLD OR USED BY PRODUCERS IN ILLINOIS, 1945-1949^a

Year	Amount tons	Value at plants		Percent change in amount from previous year
		Total	Average	
1945.....	11,144	\$184,189	\$16.53	— 7.4
1946.....	15,631	321,600	20.57	+40.3
1947.....	14,687	314,075	21.38	— 6.0
1948.....	(b)	(b)	—	—
1949.....	(b)	(b)	—	—

^a Summary of joint canvass made by Illinois Geological Survey and U. S. Bureau of Mines.

^b Not available.

FLUORSPAR INDUSTRY

PRODUCTION IN 1949

The production of finished fluorspar in the United States in 1949 amounted to 236,400 tons (including 111,247 tons of flotation concentrates) as compared with 336,000 tons in 1948. The smaller demand for fluorspar in 1949 was due to a 15 percent decline in consumption, a result of the strike in the steel industry, to a lower level of operation in the hydrofluoric acid and glass industries, and also to an 11 percent reduction in consumers' inventory (table 44).

SHIPMENTS

Shipments of fluorspar from United States mines, which established a peacetime record in 1948, declined 29 percent in 1949, according to the U. S. Bureau of Mines. These shipments totaled 236,704 tons in 1949 as compared with 331,749 tons in 1948 (table 45).

Shipments from Illinois in 1949 were 30 percent less than in 1948 and the smallest since 1940. Montana and Texas were the only states to show gains in shipments in 1949. Shipments from Illinois and Kentucky were 28 percent less in 1949 than in 1948, compared with a loss of 29 percent for other producing states.

CONSUMPTION

The steel industry continued in 1949 to lead in the use of fluorspar, absorbing 58 percent of the total production as compared to 57 percent in 1948. However, the steel industry used 13 percent less fluorspar in 1949 than in 1948.

The hydrofluoric acid industry, the second largest consumer of fluorspar, accounted for 25.8 percent of the 1949 total as compared with 26.4 percent of the 1948 total, but the industry used 17 percent less fluorspar in 1949 than in 1948. Consumption of fluorspar by the glass and enamel industries in 1949 declined for the second consecutive year and was 21 percent smaller than in 1948 (table 46).

Fluorspar consumption was reported in 39 states and the District of Columbia in 1949. Three states—Illinois, Ohio, and Pennsylvania—used 182,969 tons or 53 percent of the total consumed. Pennsylvania led again in use of fluorspar, with its steel and glass industries ranking first and its hydrofluoric acid industry ranking sixth. Illinois continued to rank first as a consumer of fluorspar for the manufacture of hydrofluoric acid.

IMPORTS

Imports of fluorspar in the United States were 95,619 tons in 1949 compared with 111,626 tons in 1948. For the ninth consecutive year Mexico was the foremost foreign source of fluorspar, and in 1949 it supplied 61 percent of the total imports. However, imports from Mexico were 27 percent smaller than in 1948, but larger imports were received from Italy and Spain. For the first time since 1940, fluorspar was imported from France (table 48).

STOCKS

Stocks of fluorspar at mines at the close of 1949 totaled 121,516 tons (100,286 tons in 1948), of which 37,039 tons was finished fluorspar and 84,477 tons was crude fluorspar (calculated to be equivalent to about 36,000 tons of finished fluorspar).

FLUORSPAR IN ILLINOIS

In 1949 Illinois maintained its rank as the leading producer of fluorspar by supplying 51 percent of domestic shipments (table 45).

The average price of Illinois fluorspar shipped from mines increased from \$36.64 per ton in 1948 to \$38.23 per ton in 1949, whereas the average price in the country as a whole was \$33.84 per ton in 1948 and \$34.92 per ton in 1949.

Shipments in 1949 decreased to 120,881 tons from 172,561 tons in 1948. Also the dollar value decreased in 1949 to \$4,621,733 from \$6,322,246 in 1948—a dip of 26.9 percent.

TABLE 44.—FINISHED FLUORSPAR IN THE UNITED STATES, 1945-1949^a
(In tons)

Year	Production	Shipments from mines ^b	General imports	Consumption	Total industry stocks
1945.....	325,200	323,961	100,726	356,090	123,011
1946.....	277,300	277,940	29,488	303,190	117,620
1947.....	343,700	329,484	78,379	376,138	147,251
1948*.....	336,000	331,749	111,626	406,269	184,213
1949.....	236,400	236,704	95,619	345,221	167,660

* Revised figures.

^a Source: U. S. Bureau of Mines.

^b Comprises shipments to domestic and foreign consumers and to Government strategic stock pile.

TABLE 45.—FLUORSPAR SHIPPED FROM MINES IN THE UNITED STATES,
BY STATES, 1948-1949^a

State	1948*			1949		
	Tons	Value		Tons	Value	
		Total	Av.		Total	Av.
Colorado.....	27,698	\$ 831,218	\$30.01	22,324	\$ 763,296	\$34.19
Illinois.....	172,561	6,322,246	36.64	120,881	4,621,733	38.23
Kentucky.....	84,889	2,663,377	31.37	63,438	2,018,209	31.81
New Mexico.....	24,968	911,682	36.51	12,844	446,086	34.73
Arizona.....	1,271	} 498,929	23.06	846	} 417,430	24.25
Nevada.....	9,615			5,847		
Texas.....	906			1,770		
Utah.....	9,523			8,332		
Montana.....	318			422		
Total.....	331,749	\$11,227,452	\$33.84	236,704	\$8,266,754	\$34.92

* Revised figures.

^a Source: U. S. Bureau of Mines.

TABLE 46.—FLUORSPAR SHIPPED FROM MINES IN THE UNITED STATES,
BY USES, 1948-1949^a

Use	1948*			1949		
	Tons	Value		Tons	Value	
		Total	Av.		Total	Av.
Steel.....	170,633	\$ 5,058,866	\$29.65	119,264	\$3,555,743	\$29.81
Iron foundry.....	6,667	220,512	33.08	3,103	103,061	33.21
Glass.....	35,960	1,294,211	35.99	27,727	1,043,512	37.64
Enamel.....	9,415	362,111	38.46	4,625	186,312	40.28
Hydrofluoric acid.....	96,848	3,852,678	39.78	70,759	2,991,166	42.27
Miscellaneous.....	11,582	414,255	35.77	10,443	354,439	33.94
Exported.....	644	24,819	38.54	783	32,521	41.53
Total.....	331,749	\$11,227,452	\$33.84	236,704	\$8,266,754	\$34.92

* Revised figures.

^a Source: U. S. Bureau of Mines.

TABLE 47.—CONSUMPTION OF FLUORSPAR (DOMESTIC AND FOREIGN) IN THE UNITED STATES, BY INDUSTRIES, 1945-1949^a
(In net tons)

Year	Steel	Hydrofluoric acid	Glass	Enamel	All other	Total
1945.....	197,916	109,315	31,874	3,695	13,290	356,090
1946.....	160,735	83,901	39,852	6,739	11,963	303,190
1947.....	209,395	100,363	42,130	8,938	15,312	376,138
1948.....	232,687	107,280	37,247	8,871	20,184	406,269
1949.....	201,501	89,152	30,797	5,510	18,261	345,221

^a Source: U. S. Bureau of Mines.

TABLE 48.—IMPORTS OF FLUORSPAR TO THE UNITED STATES, 1949^a

Country	Tons	Value
France.....	1,532	\$ 27,800
Italy.....	7,857	130,362
Mexico.....	58,238	828,901
Newfoundland.....	15,344	361,623
Spain.....	12,648	200,358
Total, 1949.....	95,619	\$1,549,044
1948.....	111,626	1,825,094

^a Source: U. S. Bureau of Mines from U. S. Department of Commerce.

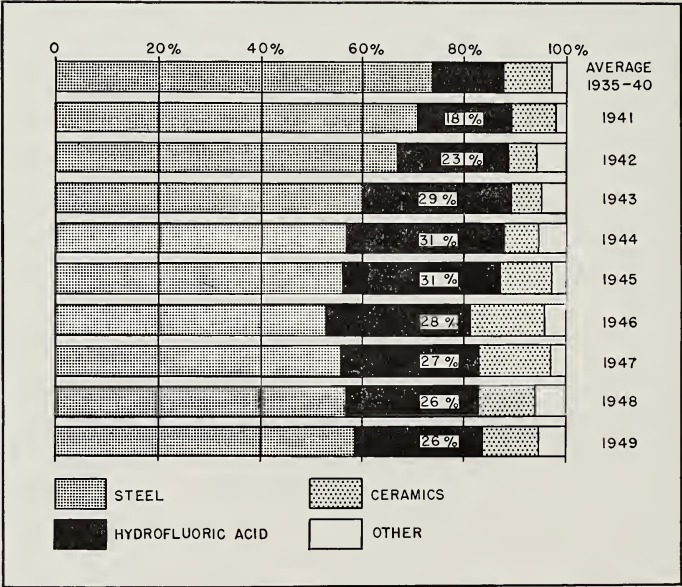


FIG. 13.—Percentage consumption of fluor spar (domestic and foreign) by industries, 1935-1949.

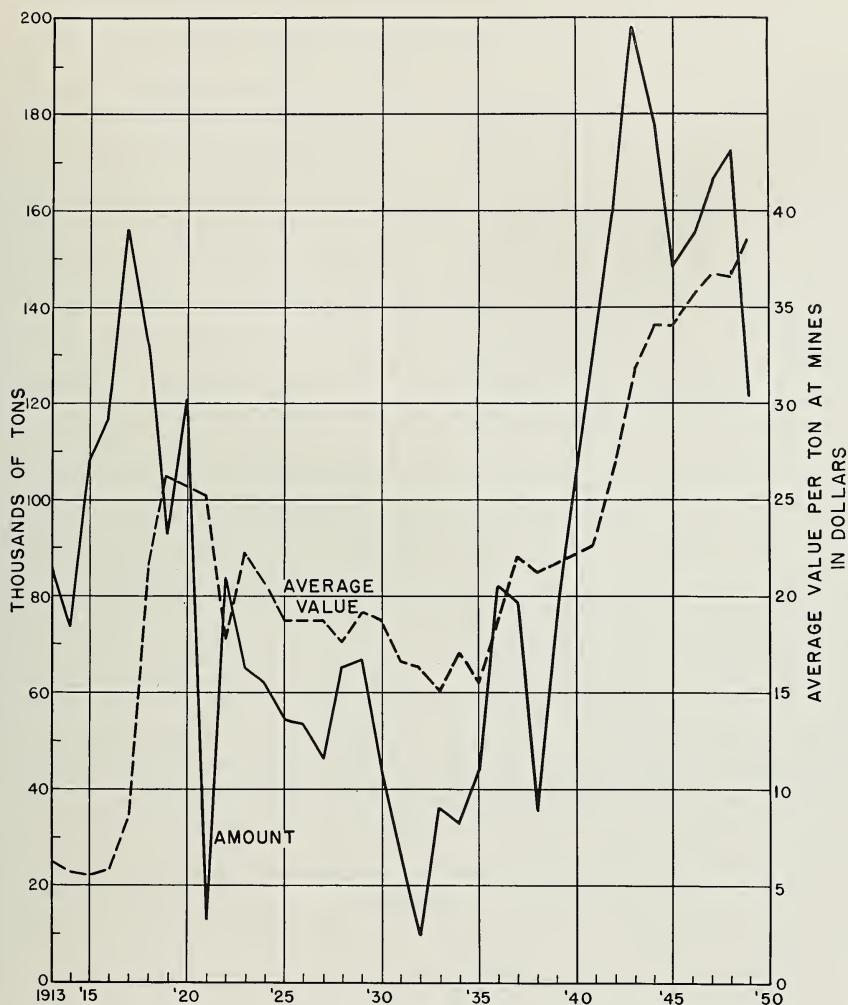


FIG. 14.—Fluorspar, annual shipments and average value, from Illinois mines, 1913-1949.

POTASH

The use of potash as a fertilizer material for soil improvement is increasing yearly in Illinois and other Upper Mississippi Valley states. Illinois, for example, now ranks third among the states as a user of potash for agriculture. Ohio and Indiana are also large consumers. Since this is the first reference to potash in the annual statistical report, a brief survey of the distribution of potash resources is given. Although the American potash industry is of recent development, potash has been used in agriculture in the Atlantic seaboard states for many years. Practically all the potash used by eastern states was imported from Germany.

The discovery of potash salts in New Mexico and western Texas has not only created a domestic potash industry, but has also opened deposits which are easily accessible to Mississippi Valley farms.

According to the United States Bureau of Mines, the world's known reserves of high-grade soluble potash salts have been estimated at more than 37,000 million

metric tons. More than 99 percent of these reserves are in western Eurasia, principally in Germany and the U.S.S.R.

The potash reserves of the United States are a relatively small part of the world total—less than 0.3 percent. Latest commercial estimates place the net recoverable reserves at only 73 million tons.

The use of potash as an important fertilizer for agricultural purposes is shown in table 49. The upward trends, in evidence since 1934, in the production and sales of domestic marketable potassium salts were continued in 1948. Production in the western states remains the dominant factor in the domestic potash industry. California, New Mexico, and Utah furnished virtually all of the 1948 output, the largest part coming from the deeply buried deposits of sylvite and langbeinite, of Permian age, in the Carlsbad region in southeastern New Mexico. The eastern states supplied only a small quantity from well brines in Michigan and as a by-product of cement operations in Maryland.

TABLE 49.—TEN STATES LEADING IN USE OF AGRICULTURAL POTASH, 1945-1948^a
(In tons)

State	1945		1946		1947		1948	
	b	Tons	b	Tons	b	Tons	b	Tons
Alabama.....		—		—	10	35,970	10	37,809
Florida.....	3	57,354	4	62,389	6	60,032	6	60,412
Georgia.....	1	64,816	1	70,709	1	86,663	1	88,547
Illinois.....	5	55,915	2	64,222	2	77,486	3	83,111
Indiana.....	9	36,851	9	39,615	9	48,990	7	54,472
Maryland.....	7	47,542	7	45,704	7	52,986	8	50,928
New Jersey.....	10	28,914	10	32,564		—		—
North Carolina.....	6	47,672	6	55,441	5	65,985	5	68,940
Ohio.....	2	59,987	3	63,574	3	74,819	2	88,533
South Carolina.....	8	42,478	8	43,715	8	52,813	9	50,895
Virginia.....	4	56,813	5	58,998	4	71,336	4	69,676
Total for 10 states.....		498,342		536,931		627,080		653,323
Total consumed in United States.....		695,100		763,590		898,150		977,381
Ten states as a percent of U.S. total..		71.7		70.3		69.8		66.8
Number of states using potash in year ^c		42		44		44		46

^a Source: U. S. Bureau of Mines, data from American Potash Institute. Deliveries of agricultural potash salts of American origin indicated.

^b Rank of state for year.

^c Includes District of Columbia.

ZINC, LEAD, AND SILVER

In 1949 the Illinois mine production of zinc, lead, and silver, in terms of recoverable metals, established an all-time high in value. According to figures published by the U. S. Bureau of Mines, the value of these three metals was \$5,714,151. This is an increase of 19.5 percent over the value of the 1948 production. Table 50 gives the production figures for zinc, lead, and silver for the years 1948 and 1949.

The production of these metals in southern Illinois and northern Illinois during 1949 was as follows: for zinc, the northern part of the State reported 12,551 tons as against 5,606 tons for the southern part; for lead, the southern portion of the State produced more than twice as much (2,635 tons) as the northern portion (1,189 tons); the entire reported production of silver (3,128 Troy oz.) in Illinois came from the southern part of the State.

TABLE 50.—ZINC, LEAD, AND SILVER RECOVERED FROM ORES MINED
IN ILLINOIS, 1948-1949^a

Metal	Unit	1948			1949			
		Amount	Value		Amount	Value		Percent change in amount from 1948
			Total	Av.		Total	Av.	
Zinc.....	Tons.....	12,980	\$3,452,680	\$266.00	18,157	\$4,502,936	\$248.00	+39.9
Lead.....	Tons.....	3,695	1,322,810	358.00	3,824	1,208,384	316.00	+ 3.5
Silver.....	Troy oz...	4,047	3,663	0.905	3,128	2,831	0.905	-22.7
Total.....	—	—	\$4,779,153	—	—	\$5,714,151	—	^b +19.5

^a Source: U. S. Bureau of Mines.

^b Percent change in value from 1948.

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